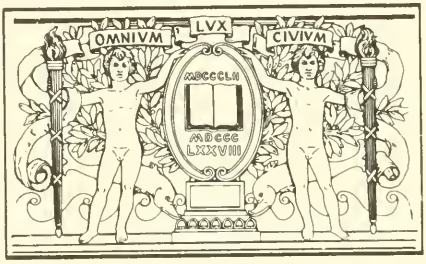

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JULIA C. LATHROP, Chief

Maternity Care and the Welfare of Young Children in a Homesteading County in Montana

By

VIOLA I. PARADISE

RURAL CHILD WELFARE SERIES No. 3
Bureau Publication No. 34

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WASHINGTON
GOVERNMENT PRINTING OFFICE
1919

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No. 6. Infant Mortality: Results of a field study in Manchester, N. H., based on births in one year, by Beatrice Sheets Duncan and Emma Duke. 135 pp., 4 pp. illus., and map of Manchester. 1917. Bureau publication No. 20.

No. 7. Infant Mortality: Results of a field study in Waterbury, Conn., based on births in one year, by Estelle B. Hunter. 157 pp. and 2 maps. 1918. Bureau publication No. 29.

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No. 9. Infant Mortality: Results of a field study in Saginaw, Mich., based on births in one year, by Nila F. Allen. — pp., — pp. illus., and — maps. 1919. Bureau publication No. 52. (In press.)

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LETTER OF TRANSMITTAL.

U. S. Department of Labor,
Children's Bureau,
Washington, July 5, 1918.

Sir: Herewith I beg to transmit a report entitled "Maternity Care and the Welfare of Young Children in a Homesteading County in Montana."

The study was made under the general supervision of Dr. Grace L. Meigs, head of the hygiene division of the Children's Bureau. The detailed direction was in charge of Miss Viola I. Paradise, who has written the text of the report. The special agents chiefly concerned in the field work were Miss Helen M. Dart, Miss M. Letitia Fyffe, Miss Dorothy M. Williams, Miss Janet M. Geister, Miss Stella E. Packard, Miss May R. Lane. The statistical material was prepared under the direction of Miss Etta F. Philbrook.

Acknowledgment is made of the valuable cooperation of Dr. W. F. Cogswell, secretary of the Montana State board of health, and Miss Margaret Hughes, director of the child-welfare division, State board of health, and the officials of the county studied.

As will be seen by the report, the facts as to maternity experiences were secured through home interviews with the mothers. Children's health conferences were held at several convenient centers, to which many well children were brought by their parents for examination and advice as to their general care. The conferences developed further facts as to the well-being of the children and gave a demonstration of practicable methods of child care, which served an important purpose in making the study of profit to the local community. Dr. Grace L. Meigs and Dr. Anna E. Rude conducted the conferences.

The infant mortality studies of the bureau show that the welfare of mothers and infants is fully safeguarded in none of the communities studied, whether urban or rural. In the rural studies new difficulties appear. And in the present study of a typical pioneer region the degree to which isolation intensifies both the need and the difficulties of safeguarding life is clearly indicated. The population is made up of young, vigorous, courageous, hard-working people who will ultimately succeed, yet the lack of agricultural development and of good roads makes it impossible for them to secure for themselves proper protection for maternity and infancy.

The safeguarding of human life and vigor is of national concern and it is reasonable to invoke the cooperation of State and Nation to that end. We may, therefore, urge that the public protection of maternity and infancy should be accepted as a governmental policy and that it be secured by such cooperation between the Federal Government and the several States and counties as has already been proved effective in the promotion of better farming, good roads and vocational education.

The researches of students make clear that the loss of population in war time includes not only the deaths at the front but also a higher civilian death rate, especially affecting young children, and an inevitably lowered birth rate. Hence, this report, disclosing as it does an unnecessary waste of life, is of essential timeliness.

Respectfully submitted.

JULIA C. LATHROP, *Chief.*

Hon. W. B. WILSON,
Secretary of Labor.

MATERNITY CARE AND THE WELFARE OF YOUNG CHILDREN IN A HOMESTEADING COUNTY IN MONTANA.

INTRODUCTION.

THE NEED FOR RURAL SURVEYS.

In 1916 the Children's Bureau began a series of rural surveys of maternity care and child welfare. Letters coming to the bureau from women living in isolated districts, requests from State boards of health, and other public and private organizations in all parts of the country have urged a consideration of the problems confronting country mothers in childbirth and in the care of their children. The fact that the United States lost in a single year at least 15,000 women from conditions caused by childbirth [1] is even less well known than is the Nation's extravagant loss of infant life.

The important bearing upon infant life of the care a mother receives during pregnancy and childbirth is made clear by the fact that premature birth, injuries at birth, congenital weakness, and malformations were responsible for the deaths of over 55,000 babies, or more than one-third of the deaths of all babies under 1 year, in the registration area in 1915,[2] and that a large proportion of these babies could have been saved and many stillbirths and miscarriages not included in this toll could have been prevented had the mothers been properly safeguarded and adequately cared for in pregnancy and confinement. How many deaths the farm areas and small villages contribute to these statistics no one knows; but the isolation, the limited transportation and communication facilties, the small proportion of physicians and nurses to the population, and the lack of community and public-health activities over great areas of the country emphasize the need of such inquiries as these rural surveys.

The Montana survey is the fourth in the series, the previous studies having been made in typical districts in North Carolina, Wisconsin, and Kansas. The survey was made in the summer and autumn of 1917.

[1] Meigs, Grace L., M. D.: Maternal Mortality from All Conditions Connected with Childbirth in the United States and Certain Other Countries, p. 14. U. S. Children's Bureau Publication No. 19, Miscellaneous Series No. 6. Washington, 1917.

[2] Mortality Statistics, 1915, pp. 11 and 414. U. S. Bureau of the Census. Washington, 1917.

SCOPE AND METHOD OF THE MONTANA SURVEY.

The State of Montana, with its tremendous area, affords many types of rural country, ranging from rich and fertile irrigated farm valleys to uncultivated grazing plains and the dry farm land of the "homesteader's country." A newly settled county in the eastern part of the State was chosen for the survey because it presented the problems now encountered by pioneers in many recently occupied areas in the Great West. A little more than the western half of this county—approximately 5,500 square miles, or an area somewhat larger than the State of Connecticut—was covered by the survey. The greater part of this district is from 70 to 100 miles from a railroad. Agents of the Children's Bureau interviewed every mother[1] in the area who had had a baby during the five years preceding the study, provided that at the time of the baby's birth the mother was resident in the district. Four hundred and sixty-three mothers were so visited. A few who were not at home at the time the agent called were not revisited on account of distance, and perhaps a few others may have been overlooked. It is estimated that possibly 10 or 12 mothers were thus missed.

In no case was information refused. The quick appreciation of the purpose of the survey and the intelligent cooperation of the parents and of the whole community can not be too gratefully mentioned.

The work included also a series of children's health conferences. Parents were invited to bring their children to these conferences for a thorough examination by a Government physician who, though she gave no treatment or medicine, advised the parents about the care and feeding of the children and offered them the opportunity of discussing the many health problems which are encountered in rearing children. To these conferences the State board of health sent the public-health nurse who is in charge of its child-welfare division. Thus the conferences were a joint activity of the Children's Bureau, the State board of health, and the local neighborhoods in which they were held, where active committees did much to make them a success.

An investigation of the extent of birth registration, made jointly with the child-welfare division of the State board of health, was also a part of the survey. In addition, information was secured from State and county officials and from a study of available statistics and reports.

The great bulk of the information, however, was obtained from the interviews with mothers. Great care has been exercised so to present the material as not to abuse any mother's confidence. All the

[1] In a few instances when the mother was away or had died the father or another near relation gave the information.

stories cited represent or illustrate typical problems. Except where a mother's experience was generally known in a neighborhood and was not regarded by the mother as confidential, no examples have been cited which could in any way be identified.

The report includes a consideration of certain conditions at present inimical to the well-being of the homesteaders living in the area, especially of mothers and children. It should be borne in mind that practically all such unfavorable conditions are susceptible of change by concerted public action, and that such action, besides relieving present duress, would doubtless stimulate the development of this new homesteading country.

SUMMARY.

In this sparsely populated homesteading area of about 5,500 square miles the tremendous distances; the isolation; the inadequate means of communication; poor roads; total absence of telephones; inaccessibility of the railroads; the often hostile weather; the lack of hospitals, physicians, and nurses; and the agricultural and economic status of the community—these conditions made it, at the time of the survey, impossible for mothers to be provided with the kind of maternity care before, at, and after childbirth which they should have.

More than three-fourths of the 463 mothers visited by the agents of the Children's Bureau had no prenatal care whatever; 22 mothers had care which could be classified as fair; and 86 received only inadequate care. One-third of the mothers had attempted to get information about prenatal care from books or magazines.

One hundred and four mothers left the area for childbirth. Of the 359 who remained only 129 were attended by a physician. In other words, almost two-thirds of these mothers had to meet the ordeal of childbirth without competent medical care. Forty-six, or more than one in eight, were delivered by their husbands. Three were quite alone.

Very few received after care by physicians, and nursing care was largely unskilled, though 14 mothers had trained nurses and 113 had partly trained nursing care.

Many mothers suffered serious complications of pregnancy or confinement and eight died—a very large proportion of losses compared with other rural areas. The State of Montana, like the area studied, has a very bad record for maternal losses.

More than one-fifth of the mothers left the area for confinement. For the most part they succeeded in getting better care than they could have had at home, but to many in the last months of pregnancy or soon after childbirth the long trip to and from the railroad, often in bad winter weather, was exhausting.

The mothers who went away from home, as well as those who stayed in the area and were attended by physicians, found childbirth very expensive. Of the 219 attended by physicians, only 14 per cent paid less than $25, and for 22 mothers the physician's charges amounted to $50 or more. Many mothers were attended free of

charge by relatives or neighbors, and much free nursing service and help with housework was given; yet nearly three-fourths of the 327 mothers reporting total immediate costs of childbirth—that is, the attendant's fees, nursing care, and help with housework—paid more than $25, and 28 mothers paid $100 or over.

For mothers who went away for confinement these costs, plus the cost of the trip, board while away from home, etc., were very large. Reports of the aggregate costs were secured for 19 mothers, for whom these aggregate costs, in all but four instances, were $150 or more, and in two instances $700 or more.

Certain forms of housework, chores, and farm work which countrywomen do before and after childbirth may be hazardous. Most of the mothers worked up to the time of confinement. Sometimes, because of the lack of conveniences and labor-saving devices, the difficulty of securing help with housework even at confinement, they performed very heavy tasks. The carrying of water was particularly difficult. As a rule, mothers resumed their work much too soon after childbirth. Nearly one-fourth of the women were doing all their housework, except washing, before two weeks had elapsed, and nearly half were doing their housework, washing, and chores within four weeks after parturition.

One of the most serious problems found in the Montana survey was housing. Seven out of 10 families were living in one or two room houses, and the crowding was very great. In 57 per cent the rate of congestion was two or more persons per room. The sleeping-room congestion was even worse. Nine out of 10 families slept two or more persons in a room, and in slightly more than half the homes the rate was three or more persons to a room. In 27 instances seven or more persons slept in one room. The prevailing types of houses were the log house, the sod house, the tar-paper shack, and the dug-out.

Two hundred and sixty-two homes, or well over one-half, were adequately screened; but even in most of these homes and in practically all the others flies were a great nuisance. Unscreened privies or lack of privies and inadequate disposal of waste water were doubtless partly responsible for the flies. Although the prevailing type of privy was the deep-pit privy, closed in back, and so built that the excreta were not accessible to the larger farm animals; nevertheless privies were unprotected against flies. A large number of families, nearly one-fourth, had no privies at all.

The water supply is a most important factor in sanitation. Only 54 families had drilled or driven wells. The prevailing type was the dug well, usually unprotected against surface drainage. Many of these wells were shallow and in hot weather they would dry up. The families living along the rivers used the raw river water, some

of them cutting ice from the river in winter, storing it, and using the melted ice as long as it lasted. The use of melted snow in winter was also common. Often several sources of water were used for different purposes or at different times of the year. The high alkaline content of the water all through the area often led people to choose their source of drinking water by the taste rather than by the freedom from contamination.

As the county becomes more thickly settled the water supplies, if they remain unprotected, will doubtless cause much sickness. There had already been a few recent cases of typhoid fever.

Most of the infants and young children impressed the agents making the inquiry as unusually healthy and sturdy. Nevertheless the minimum infant mortality rate[1] of 71 per 1,000 live births was nearly twice as high as the rate of 40 for the area studied in Kansas and was 17 per 1,000 higher than the rate of 54 found in the Wisconsin area. Inasmuch as it is now known that many infant deaths can be prevented the inadequate prenatal and confinement care provided for the mothers in the area takes on an added significance.

On the whole, the mothers in the area are very careful about the feeding of their babies, practically all of them having given their children breast feeding. Only 21 per cent of the babies had been weaned before their ninth month.

The birth-registration test made in cooperation with the State board of health revealed that only 31 per cent of the live-born children born in the area covered by the survey had the advantage of a birth certificate, and that, though the children born within a year of the agent's visit had a slight advantage over the other children, only 39 per cent of these later births were registered.

Although the State has an excellent law permitting counties to use public funds to employ public-health nurses, advantage has not been taken of this law in the area studied. Indeed, there were practically no State or county activities which directly touched the welfare of mothers and young children in the area.

Before proceeding to a more detailed discussion of the chief findings the reader will wish to know something of the country in which the survey was made and of conditions there which affect the well-being of mothers and babies.

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[1] See p. 70.

ECONOMIC AND SOCIAL CONDITIONS IN THE AREA STUDIED.

HISTORY AND POPULATION.

The history of the county has been the story of Sioux Indians and early explorers; of hunters and fur traders in the days not so very long ago when the bison ranged the prairies; then of a few ranchmen, scattered at great distances; of great herds of cattle and sheep, succeeding the wild buffaloes; and of the famous cowboy; then of the coming of the dry farmer with his hated fences; and of the crowding out of the open-range cattlemen and the substitution of the homesteader.

The country is still very young. A man who herded sheep here 20 years ago said that at that time he knew of only three families in the whole area studied and in hundreds of square miles besides, and that these lived over 50 miles from one another. Although there are a few families of over 12 or 15 years' residence, the district has been settled mainly within the past 5 or 6 years. Of the families visited, 56 per cent were still "squatting" or homesteading at the time of the birth for which a schedule was secured. The "squatters" are those who live on land on which claims can not be filed because it is still unsurveyed or the survey of the land is unaccepted. There are still over 1,400 miles of unsurveyed and unaccepted land in the area.[1] In some cases families were "squatting" after 10 years of residence. Taking the area as a whole, however, people who have lived here 5 or 6 years are regarded as old settlers.

The story of one successful family of these "old settlers" is typical of many others who have come to settle in the county. The family is exceptional in that it has been in the area longer than the great majority of the homesteaders. Five years ago the father bought a "relinquishment" from a homesteader who had become discouraged before the end of his first year on the homestead, and who had made practically no improvements on the land. The new homesteaders, who came in the late spring, at once put up a one-room sod house, 12 by 14 feet, in which they lived for four years.

The father cultivated a little land. The first crop consisted of five rows of potatoes, which by the exercise of great economy "took

[1] Information given by the U. S. surveyor general for Montana.

the family through the first winter." Each year the father plowed and seeded a little more land, until now, at the end of five years he has 50 acres under cultivation. He bought stock, one head at a time. For nearly five years he hauled water in barrels over a mile, because he was unable, except by expensive drilling, to get water nearer the house. As the cattle increased he had to haul a barrel every day. Recently he has had a well drilled; this well, a windmill, several outbuildings, and a new house bespeak comparative prosperity.

The new house was built after the family had been on the homestead for four years, the old "soddie" having dried out until it was no longer waterproof. The lumber for the new one-room dwelling, though enough only for the roof, floor, doors, and window frames, cost $200. The sides of the house are made of stone which the father dug from the neighboring buttes. These stones are plastered together with a homemade gumbo cement. The wooden roof is sodded to make it waterproof and warm.

The house furnishings consist of two double beds at one end of the room, a kitchen range, a large table and several chairs, a cupboard, and an improvised wardrobe made by hanging a curtain from a high broad shelf. A sewing machine and a cream separator were recent acquisitions.

On all these homesteads the women share with the men the burdens of pioneering and the credit for success. In the present instance, the mother, in addition to her housework, helps care for the stock, raises a garden, keeps chickens, milks, separates, and churns. Indeed, it was largely the money she earned by the sale of butter which made possible the installation of the windmill and other improvements.

The homesteaders in the district have come from all parts of the United States, and for the most part they are Americans of native parentage. In many instances they are the children of parents who homesteaded in the Middle West and in the Southern States. A few Russian-German neighborhoods formed the only considerable foreign element in the area studied; 30, or 6.5 per cent, of the mothers visited were of Russian-German birth; 367 mothers, or about 8 in 10, were American.

In this predominantly American community illiteracy is only a slight problem, 95 per cent of all mothers and 86 per cent of the foreign-born mothers being literate. There were, however, eight mothers of foreign or mixed parentage who, though born in the United States, were illiterate—unable to read and write in any language. Six of these could not speak English. One of these women explained apologetically that there were no schools in the North Dakota neighborhood where she was reared. Of the foreign born, 22 were unable to speak English.

No recent official statistics are available either for the population of the county as a whole or for the western part covered by the Children's Bureau study. In 1910 the county had a population of 12,725. How new the county is is evidenced by the fact that this was an increase of 420 per cent over the population at the preceding census. In 1910 the area of the county was 13,231 square miles, and on the average there was more than a square mile for each dwelling. The area has recently been reduced by the formation of new counties to 9,259 square miles[1]—an area somewhat larger than the State of Massachusetts. It is doubtful if the western half of the county, which was so much more recently settled, has even at the present day a much greater density of habitation than one dwelling per square mile.

DESCRIPTION OF THE COUNTRY.

The country varies greatly in appearance, but always there are tremendous, almost incredible distances. The great, wild, rugged, sweeping plains—broken by buttes of many shapes and by sudden gray cut banks—were at the end of a cruelly dry season burnt dun and brown and yellow. Occasionally, a bright green flax field or a small field of corn, looking almost as if painted on the landscape, gave a startling contrast; but such contrasts are rare, for the country has been used almost exclusively for grazing, very little of it being under cultivation. Frequently there are outcroppings of rock, fantastic in shape, the result of erosion or of wind sculpture. Scrub growths of bluish gray-green sagebrush mottle the prairie and occasionally cover whole fields; again, there are stretches with no grass but the sparse, sear wild hay, or buffalo grass. A low cactus grows in quantity here and there. Some Russian thistle, which at the beginning of the investigation was a dull unobtrusive green, changed to a glowing copper-red in the autumn. Indeed, this change and the yellowing of the few cottonwoods which grow along the Big Dry and other stream beds were almost the only changes of color brought by the autumn. The country, except for these cottonwoods and except in the "breaks," is treeless. An occasional little tar-paper shack or "soddie" of some homesteader, or a log house, or a sheep herder's white covered wagon on these sweeping plains and hills accents the wild vastness of earth and sky. Indeed, everything seems to emphasize this vastness, whether it be a small herd of cattle or a large, a great flock of sheep or a single grazing horse on the top of a distant hill silhouetted against the sky. Sometimes one can drive great distances and see no sign of human habitation and no sign of animal life

[1] Information given by the county surveyor.

except a flock of sage hens, or a prairie-dog town, or a coyote, or, less often, a bobcat, or some antelopes.

But of all the features of the landscape the most compelling are the buttes. These strange hills vary in size and shape and color. Many of them are classed as bad lands. Often they spring up out of a comparatively smooth plain and look like a child's drawing of a mountain; again, they heap themselves together in ranges of hills, giving a jagged, almost grotesque sky line. Sometimes they are covered with wild hay and sometimes they are bare; often they are streaked with lignite coal; often they are heaps of shale rock. Their colors vary from the tan of the prairie to a rare pastel red or orange. Most often, perhaps, the butte is the somber purplish gray of gumbo.

As one approaches either of the two rivers which bound the county on the north and west, the land becomes very much rougher and is known as the breaks. Here the many creeks and streams on the way to the rivers have cut deep twisting gullies; and here for the first time one sees trees in some abundance—abundance only by contrast with the county's treeless prairies, for the breaks are but sparsely dotted with pines, cedar, and juniper. In some places the hills are quite barren, except for a few gnarled and scrubby cedars. The ground is here and there covered with creeping juniper and creeping cedar.

The large areas of bad lands (really a part of the breaks, though not so considered locally) are weirdly picturesque. They are high, bare buttes of rock or gumbo, varying in color through all the shades of gray to the rarer brick red or orange. The sides of the canyons show the formation of the rocks in horizontal streaks of many different colors. The breaks and bad lands extend back from the rivers some 15 or 20 miles and are especially rough along the creeks. This rough land (excepting that which is absolutely barren) is much prized for grazing, because it affords protection for the stock in bad weather.

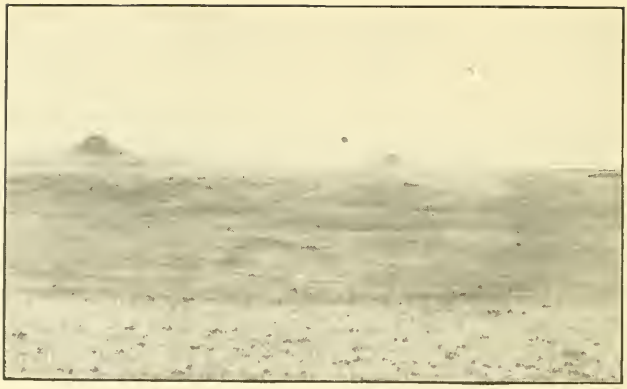
Along the two rivers cottonwood trees abound. The strips of river-bottom land are fertile and valuable for farming. This land was the first to be settled, and the comfortable log houses of the ranchers, the high hay stacks, the large corrals, the frequency of cultivated fields, bear witness that the settlers have prospered.

The river-bottom district comprises only a very small part of the area studied in the Children's Bureau survey. For the most part, the country consists of the rolling prairie and breaks and bad lands, which have been described.

HORSES BEING DRIVEN TO MARKET.

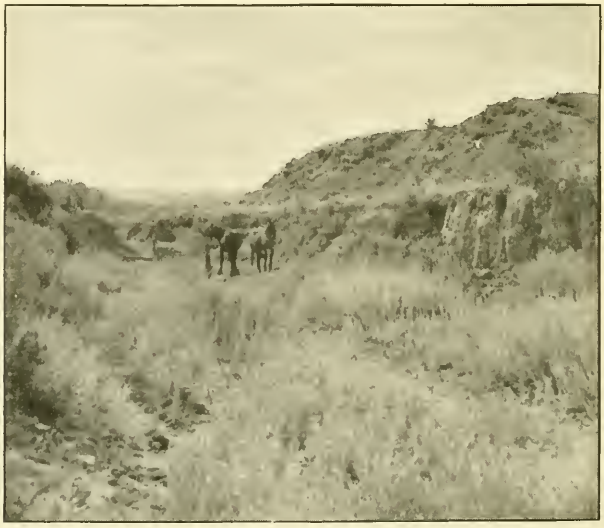
NOT A PLOWED FIELD BUT AN OLD TRAIL FURROWED BY WAGONS AND ESPECIALLY BY FREIGHTING "OUTFITS."

WINDING TRAIL ACROSS THE PRAIRIES.



TYPICAL BUTTES.

WINDING ROAD NEAR THE BREAKS.



A COULEE.

ROADS AND MEANS OF COMMUNICATION.

In this area, the greater part of which is from 70 to 100 miles from a railroad and where even the telephone has not yet become a means of communication, one looks with interest at the roads, or rather at the trails, for they are seldom referred to by the people of the county as roads.

Needless to say, there are no hard-surfaced roads. Very little work had been done on the trails until recently, when the county took advantage of the new Federal road bill in accordance with which the Government contributes a sum equal to a county's appropriation. The county studied was among the first to take advantage of this offer and appropriated for 1917 $20,000, none of which, however, is to be spent in the area covered by the Children's Bureau investigation.[1] Work had already been begun at the time of the survey.

In this country work on a road consists of straightening, now and then digging out a hillside, filling in a gully, installing a culvert, building a wooden bridge over a stream, and grading and surface dragging. This work is confined to the "main traveled trails" and has not by any means covered all these; about 70 miles have been worked on in the area studied. It is impossible to get any figures for the total road mileage in this area, but it is safe to say that the improved road mileage is a very small fraction of the whole.

For the most part the roads are nothing but wagon trails, in some instances following the old buffalo trails to water. As soon as the ruts get so deep that the bodies of vehicles are endangered by the high centers, a new trail is started by the simple process of moving over a little, one new rut being started between the two old ones, and the other to the right or left of the old ones. After this process has gone on for some time, the ground looks, sometimes for a width of 50 feet, as if it had been plowed.

The less traveled trails, except where they are too faint, are often the best, for wagons and automobiles have not yet gouged them out. However, as they twist tortuously up a cut bank or down a coulee, or around the side of a butte, they test the skill of a driver, whether of a team or of a machine. There are many stretches of gumbo road which in wet weather are impassable on uneven ground; and even on comparatively level ground a car or wagon slithers around dangerously.

Many of the trails were established before the county was surveyed. As people have taken up homesteads or squatted on the land they have built fences across the casual trails, hence the traveler has many

[1] Information given by county commissioners.

gates to open. When he finds a rag tied to a barbed-wire fence he knows there is no thoroughfare and he must go around.

There are so many cross trails and branching trails and so few landmarks that to find one's way is difficult. A typical direction, "down Buffalo Hill, between Hell Creek and Crooked Creek on Beebee Bottom; you can't miss it," might be easily followed by one who knew the neighborhood well, but is almost baffling to an outsider who does not know where all the faint trails lead.

The transportation problem is complicated by the fact that many homes are far off the traveled trails. A neighbor will say in giving directions, "Just keep going in that general direction; you'll lose the trail and find yourself in the midst of some pretty rough sagebrush, but if you keep due west you'll find it again." The intricacies of travel are also illustrated by another direction, "Go to the top of the next hill where you see a gray horse. Follow the lane till you pass the horse, and farther on you'll come to some plowed ground. There you turn to the right and follow the fence a ways. You'll go through a coulee and you'll see a butte ahead. Climb to the top of that, and a mile or so beyond you ought to see the dugout."

Automobiles are becoming fairly common, though the great majority of people still must depend upon horses. Of 463 families visited in the investigation, 59, or about 1 in 8, owned automobiles. Frequently cars are purchased before other necessities. Sometimes a family of five or six will postpone adding a room to a one or two-room shack in order to use the money this would take to buy a car. The car is a business investment, and the well-being of a family is greatly enhanced by its possession.

Some homesteaders, just starting out, had neither team nor car; a few had not even a saddle horse. They were obliged to depend entirely upon neighbors for transportation.

In the breaks the roads are very much worse than in the rest of the area studied, though the oldest and most prosperous settlers live there. Some well-to-do families living in this part of the district do not own automobiles because it is impossible to drive them on the steep, narrow, winding trails of the breaks. Indeed, it is impossible to drive even a team on many of these trails. One father owns a car which he keeps with friends at the end of the roughest land. When he and his family wish to use it they walk or ride horseback to the car and leave their horses until they return. Another family lives 8 miles from the most accessible road which can be used by any vehicle. A very rough bridle trail leads from the road to the comfortable little log cabin. This trail can be traveled only on horseback or on foot; no supplies can be carried along it; and the family must get its supplies from across the river.

In the breaks the only practical way to get about is on a sure-footed horse, one capable of swimming the creeks when the water is up in the spring. Often, however, the water is so high and swift that it is dangerous to swim the creeks on horses, and families are cut off, sometimes for a week at a time, from their nearest neighbors. One father, in discussing the need of better maternity and infant care, remarked, "First get the county commissioners to put in roads that would make it possible for the doctor to arrive here if we did have him within calling distance. In the spring, when the water is high, and we can not cross, we are cut off from the world as effectually as though we were on an island."

People in cities usually think of every country family as having its mail box, with mail delivered daily to the door by rural carriers. In the area studied only a few families living along the "star routes" (on which the carriers bring mail to the post offices) are so fortunate. Nearly everyone must go to the post office, often many miles away, for mail which is delivered there once or twice—in some rare instances three times—a week. No post office had daily deliveries and the largest center in the district had only two deliveries a week. All the mail must be brought from railroad towns in other counties, and in some cases it is relayed to several carriers before reaching its distribution point. Bad weather, of course, complicates the service. During the winter preceding the survey first-class mail was delayed for a week or two at a time, and in parts of the area for much longer periods, while the parcel post was in many instances held up for months. "People had Christmas till Easter," said one woman describing the difficulties of getting mail.

The delay of the parcel post is very serious in a country community where the mail order is the predominant manner of purchasing. There were several complaints from persons whose winter underwear, ordered in the autumn, did not reach them until spring. In one instance a child was without shoes because the mail was delayed. A more serious case was that of a mother who, feeling ill during her pregnancy, consulted a physician. He gave her a prescription, which she sent to the nearest railroad town to be filled; but the roads were so bad that the medicine did not get through for two months.

Often long delays in the first-class mail create very difficult situations. In one instance a mother decided to go for her confinement to the home of her sister, 25 miles away, but within 2 miles of a physician. The mother wrote to the physician three months in advance to engage him. When she went at the appointed time the physician was away and she was confined without a doctor's services. He did not receive her letter until a week after the baby was

born. This delay of over three months was due to the winter weather and bad roads.

The four or five villages had post offices. In addition to these, there were about 35 scattered about in country stores and in some instances in private houses.

The stage, which runs daily in the open weather from the railroad to the largest "inland" village, makes possible the delivery of telegrams for a limited area and for part of the year. However, one woman who lives 74 miles from the railroad reported that last winter, when the stage was not running, she had to pay $40 for the delivery of a telegram three or four days late. There are, of course, many districts to which it would be impossible to deliver a telegram during bad weather. An enterprising group had planned and purchased the equipment for the installation of a wireless service, but the installation of all private wireless service was forbidden by the Government on our entrance into the war.

The rivers which bound the county on the north and west are further impediments to communication except in winter, when they are frozen hard. The many families who depend for supplies, medical service, and mail upon towns across the rivers are often at the mercy of the coming in or breaking up of the ice, the dangerous spring floods, and the eccentricities of the ferry.

The telephone has not yet become a means of communication in the community studied. No home was equipped with one. Only 26 families lived under 25 miles from a telephone and to many of these the telephone, being across a river, was much more inaccessible than the distance would indicate. As far as the people in the area studied were concerned, this convenient tool which we have come to consider indispensable might never have been invented. Nearly 7 families in 10 lived 50 miles or over from a telephone and 32 families had no telphone within 100 miles.

Many of the problems of communication will be solved when a proposed railroad which will run through the area studied is actually built. The people of the communities are looking forward to this railroad with great eagerness. The phrase "When the railroad comes" has to many the same connotation as "When our ship comes in." Characteristic of the enterprising nature of the homesteaders was a volunteer census which they made, covering many parts of the county. A committee divided the county up into districts and persons were selected in each district to canvass the population to learn the amount of acreage at present in crops in these areas and to get a statement as to the amount which each farmer would plant if a railroad were built. These statistics were incorporated into a petition, which was sent to Congress, for a Government railroad.

CLIMATE, LIVE STOCK, AGRICULTURE, AND MARKETS.

Climate.

The weather competes with the tremendous distances, the inaccessibility of markets, and the poor roads for the place of dominant factor in the economic and social life of the people in the area. The land lies at an altitude of 2,500 to 3,000 feet. The dry, clear atmosphere is very invigorating except in the extremely hot or cold weather, and even in such weather the heat and cold are not felt as much as they would be in a more humid climate.

At the two observation stations of the Weather Bureau in the area the mean temperatures for January, 1917, were 11.6° and 13.2° above zero, respectively; and the minimum temperatures for that same month were 38° and 42° below.[1] The maximum for August of the same year was 94° at one station,[2] but three stations near the area studied (indeed, nearer to some parts of it than the station within the area) reported maximum temperatures of 98°, 99°, and 110°. These figures scarcely begin to give the reader a correct impression of the weather, because the high winds and the cumulative effect of a long dry spell or a long cold spell can not be told in figures. The effect of the past hot, dry summer upon agriculture will be discussed.[3] Crops failed, and wells and streams dried up; automobiles trying to cross the Big Dry River near its mouth had to be hauled through the deep sand by teams. Now and again one finds a dry stream bed white with alkali deposit. In parts of the area studied the saying, "It hasn't rained since it snowed," was current. It had snowed on Decoration Day, and except for one or two negligible local showers there had been no rain up to the middle of October, when there were both rain and snow.

People were looking forward with misgiving to the winter and hoping fervently that it would be "open." Otherwise, with very little feed raised for the animals, many families expected losses as disastrous as those of the previous winter, when thousands of sheep and cattle had died in the cold. During that winter, one wealthy sheep raiser lost 5,000 sheep, though he herded them himself, thinking that he could care for them better than would a hired employee. What little hay there was in the neighborhood sold for $40 a ton, over twice as much as it had ever brought before; some persons reported that they had paid $75 a ton. In parts of the area hay could not be obtained for any price; and there were no means of getting it hauled from the railroad because of the snow. The animals suffered greatly,

[1] U. S. Dept. of Agriculture, Weather Bureau, Climatological Data, Montana Section, January and August, 1917.

[2] No figures for the other station are given.

[3] See discussion of agriculture, p. 22.

and many of them died of hunger after staggering around for weeks in the snow and bitter cold. The icy crust which formed over the snow made it impossible for them to get feed from the ranges. The autumn of the survey many of the farmers were selling much of their stock, because the risk of a bad winter was too great to take.

Isolation, of course, augments the distress caused by the winters. One mother's statement summarized the attitude of many: "It is maddening to be tied up the six long months of winter, day after day, with no break, and always in fear that the baby will be taken sick and we would be unable to get her to a doctor. It is dangerous to go after coal because storms come up suddenly, and then the men get lost easily. Last winter we ran out of coal in January, and we ran out of feed in April, and 70 cows perished from hunger."

Many terrible stories were told about the winter preceding the survey, in and around the area studied. For example, a woman and her three children left a neighbor's house, where they had been visiting, to return to their own home about half a mile distant. The husband, who had been away and was delayed by the storm, returned a few days later. When he was about a hundred feet from his house, his horse stumbled and shied, and the man, dismounting, found his wife in a snowdrift, sitting upright holding one child—both frozen to death. The two other children he found near by, also frozen.

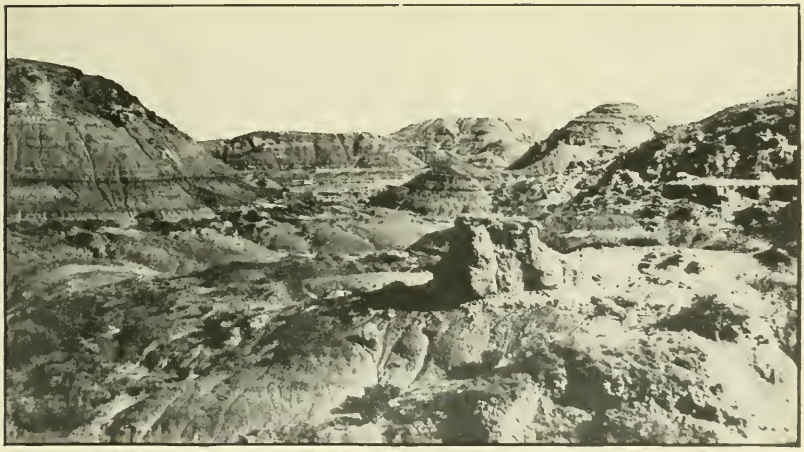
Another story was told about two school-teachers who were homesteading and whose matches gave out during a blizzard. After waiting in vain for help, knowing that it was useless to go out into the storm, they wrote farewell letters and went to bed. They were found, some time after, frozen to death.

Such harrowing stories of the winter as these, and the accounts of the crop losses of the summer, strike the imagination so vividly that one is likely to forget the long, beautiful autumns with their bracing air and the pleasant weather in the late spring and early summer.

Live stock, agriculture, and markets.

Until very recently, the county was used entirely for grazing. The wild hay, or buffalo grass, which grows so hardily in spite of the worst droughts, is more highly prized by cattlemen than any crops at present cultivated. It is not many years since cattle were driven up from Texas to graze hereabouts.

The county agriculturist estimates that about half the land is tillable, having as the predominant type of soil a clay loam which would produce gratifying crops if it could get enough moisture, and, even with limited moisture, would produce an excellent yield of cereals if properly tilled and cultivated. The frequent long, dry summers,

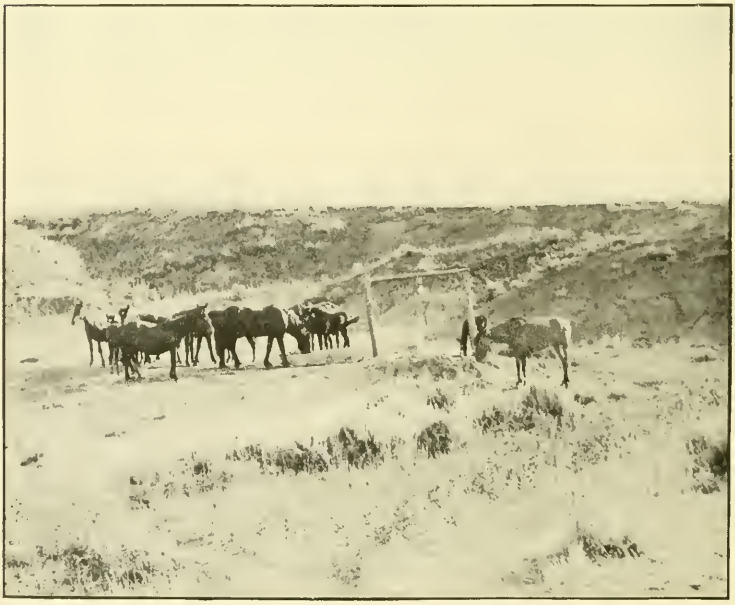


TYPICAL BAD LANDS NEAR HUNGRY CREEK.

THE BREAKS WITH A GLIMPSE OF RIVER.

CATTLE GRAZING ALONG A CREEK BED.

GRAZING SHEEP.



HORSES AT A WELL IN A COULEE.

however, with no means of irrigating the land[1] make farming a hazardous occupation. People are dependent upon the weather. The year of the Children's Bureau survey the crops were almost a total failure. The dry farmer, in answer to the country's demand for wheat, had endeavored to seed as much land as possible. Although a comparatively small acreage was planted (39 per cent of the farmers questioned having less than 50 acres each under cultivation), nevertheless, it represents a great effort on the part of these settlers who have come to their homesteads with little capital, slight equipment, and, not owning the land, with no opportunity to get credit. The loss of stock and the crop failure this year has meant financial ruin to many. The county agriculturist and others in the community think the land should remain for many years—at least until a railroad is secured—chiefly grazing land, with corn and other feed grains raised for home consumption. They think that, though the large-scale stock raising, possible only with the "open range," will be farther and farther crowded out, cattle will continue to be the chief product, with many small herds owned by many homesteaders instead of great herds owned by a few ranchers. This is indicated by the present tendency. As soon as possible after filing on his land the homesteader buys a few head of cattle. The number of cattle owned by the families included in the survey ranged from 1 or 2 head to 600; most of the homesteaders had under 20 head of cattle and horses, and only a few had over 100. A very few families had large herds of sheep, in some instances over 1,500.

The cattle are bred only for beef, there being practically no dairying. Only a small proportion[2] of the families who have cattle milk even one cow for their own use. The stores in the towns report that they sell hundreds of wagonloads of canned milk. This situation is hard for an outsider to understand even if he is told the difficulties of keeping a milch cow. Such a cow ought not to be allowed to range with the herd, because the calves would milk her; she would, therefore, have to be kept in a separate field; this would entail the expense of fencing and also of buying feed. At present, with markets so far away, there is no outlet for a surplus of dairy products, and many families feel that they can manage without milk and butter for a few years until the longed-for time "when the railroad comes." This is unfortunate, for fresh milk and dairy products should be important items in the diet of children.

[1] One or two farmers had built reservoirs in which they had saved some of the water from the full creeks of the spring season. Such reservoirs are very expensive and it is doubted by many local experts whether the results pay for the cost of such irrigation.

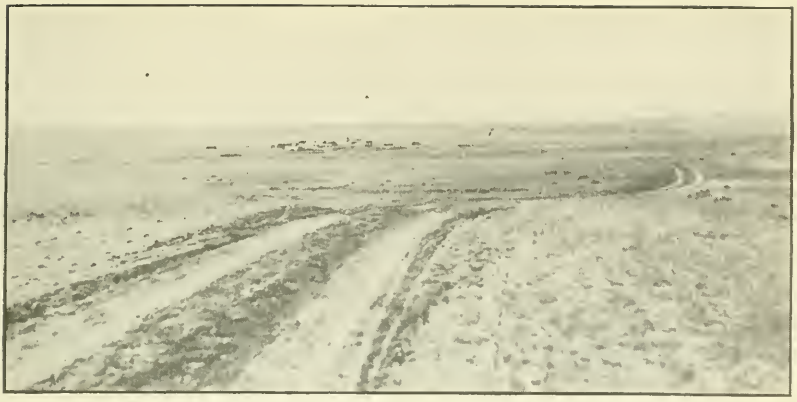
[2] Only 133 mothers, or a little over one-fourth, reported milking as part of their work.

The distance from markets and even from the means of getting to the market—i. e., a railroad—has a stunting effect upon many kinds of agricultural activity. Practically the only crops attempted are flax and wheat (the chief grain crops), and corn, oats, and barley (the important feed crops). Even these are undertaken on a very small scale, though enough wheat is raised to keep busy the two little mills in the area. Even garden products are few, for where water is scarce gardening is very laborious. A few gardens, however, which produced excellent vegetables, were found. In one of these rare cases the woman had achieved her successful crops by utilizing the waste wash water. If markets were available for garden surplus over what a family could use, probably many farmers would increase their garden space, and many more would undertake raising garden produce in spite of the scarcity of water.

The four or five villages in the area are not markets in any real sense. The only considerable product of the country is live stock, and that is "rounded up" in the spring and autumn and driven direct to the railroads. The villages are chiefly distributing centers for food, clothing, etc., brought out from the railroad to be purchased by people living in the country. For the most part they are small—often less than a dozen houses and stores altogether—sometimes only four or five buildings. The largest village has a fluctuating population reaching about 250 or, according to the most liberal local estimate, 300 inhabitants in winter, when people come into town from their homesteads to send their children to the town school or for other social reasons. Nearly every family in the town has a homestead, and during the spring and summer the population dwindles. This village and one of the others have each a small mill, from which flour is supplied to local stores.

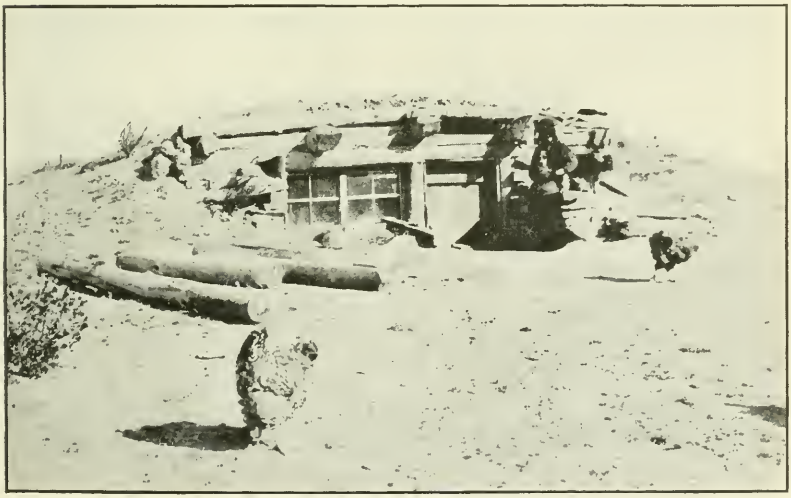
Except this flour, the soft coal, which people can dig for themselves out of the sides of hills, and a little lumber from the breaks, practically everything must be "freighted" from the railroad. Some families, especially the large ranchers who have the horses and equipment, do their own freighting, going to the railroad and buying supplies for a season and in some instances for a whole year at one time. Often they have in their cellars and dugouts larger stocks than those kept by many of the country stores. Some men make a regular business of hauling. In addition to an auto stage, which drags "a trailer," the long freighting outfits with four or six horse teams, a string of wagons, and a white covered wagon at the end, are common sights on the long trails. This hauling, of course, makes the cost of living high. The freight rates from the railroad to the chief inland village range from $1 to $2 per 100 pounds in summer, and from $2 to $5 in winter.

One of the most expensive items is lumber, whether it is hauled from the breaks or from the railroad. In one country store fence



A VILLAGE ON THE PLAINS.

DWELLING AND COMBINATION POST OFFICE AND STORE WHERE A CHILDREN'S HEALTH CONFERENCE WAS HELD.



THIS DUGOUT SERVED AS A HOME AND POST OFFICE.

A PROSPEROUS RANCH ON THE RIVER BOTTOM.

HOMESTEADERS.

posts, which sell for 25 to 35 cents apiece, supplement silver as a medium of exchange. The storekeeper takes pay for commodities in fence posts and then sells them or buys more stock with them.

Although the stores in the villages distribute large quantities of food and merchandise, nevertheless mail-order buying is the favorite method of purchasing, and the large catalogues are referred to with local humor as "homesteader's Bibles." It was interesting to learn that some families sheared their sheep and sent the wool to a mail-order factory in the Middle West, which made all their clothing, from underwear to overcoats, using the family's own wool and taking part of it in payment for weaving the cloth and making up the garments.

ECONOMIC STATUS OF THE FAMILIES VISITED.

In the infant mortality investigations which the bureau has made in cities, the coincidence between a high infant death rate and poverty has been conspicuous. In cities the economic condition of a family can as a rule be measured easily by the money income. In rural areas, however, the money income means very little because the farm contributes largely in produce instead of money to the family living. In an area like the one surveyed, where nearly all the farms have the same acreage, where tenancy is not a problem, and nearly everyone is either squatting or homesteading, or has just proved up on his homestead, it is impossible to classify the families visited into any income or economic groups which would be significant in regard to the care of the women at childbirth and the well-being of their children.

There is not a wide variation in the financial condition of the people; the whole area is young and struggling. There were perhaps 20 or 30 wealthy ranchers owning large herds of cattle or horses or large flocks of sheep. On the other hand, there were some who were having an especially hard struggle. The earliest years on a homestead are, of course, the hardest; and they are especially difficult if they include a drought. But even after several years of homesteading many families were having a difficult time.

A typical instance was one family which had proved up on its 320 acres, but had had "bad luck," as they expressed it, with the farm. The crops failed and two cows died with calves. Last year they borrowed over $1,000 on a mortgage at a 10 per cent interest rate, and they did not know how they were going to meet the interest due. The mother said, "We have nothing to sell but our milch cows, and that is my children's food." Doubtless many other families, and among them some who have the title to their land, have found themselves as hard pressed as this since the winter set in.

In another family the mother complained that the crops the previous year had been so poor that the father "had to go away last winter to earn money enough to keep us going." This winter, again, he had gone to get work elsewhere, and there was little prospect that the mother would be able to join him, for he was over 125 miles away and the trip was expensive. She had sent the oldest daughter to her grandmother in another State that the child might have the advantage of a good school. Her nearest neighbor and a family of relations who had come out to homestead when she and her husband came had both gone for the winter, and the mother had a very lonesome season in prospect.

One hundred and twenty-nine fathers had to supplement their incomes by a secondary occupation, in 38 cases by farm labor, some fathers "hiring out" only at seeding or harvest time. Twenty-two gave farming as a secondary occupation, having for their chief employment farm work not on their own homesteads, storekeeping, carpentry, well drilling, etc. They were holding their homesteads chiefly as investments, or postponing work on them until they could save a little capital for implements, seed, etc.

On the whole, neither the care of the mother at childbirth nor the family living conditions were dependent wholly upon the prosperity of the individual family. The problems which this report represents are not of any one economic group, but are problems of the whole community.

MATERNITY CARE.

INACCESSIBILITY OF MEDICAL CARE.

The inaccesibility of medical care in confinement was the most striking finding of the inquiry. The great area of 5,500 square miles had not one hospital. And in the period covered by the inquiry there were only three physicians in the area registered in the State of Montana, and two or three others, not registered, who said they came to the county not to practice medicine but to homestead. They were drawn into practice, however, because in emergencies their neighbors called upon them and they could not refuse to go; one or two reported that they did refuse unless it was a matter of life or death.

Less than one-third of the mothers lived within 10 miles of a physician and more than one-third were 20 miles or more away, 10 of these being from 50 to 100 miles from a physician.

The country does not invite physicians, because, as the agents making the inquiry were told again and again, "There is almost no sickness here except confinements and accidents." One result of this state of affairs is that when the importance of good confinement care is realized, and when the family can afford it, the women go away for confinement—sometimes to a hospital in one of the nearest cities, sometimes "back home," sometimes to friends or relatives in another rural district where medical care is more easily obtainable.

ATTENDANT AT BIRTH.

Of the 463 mothers, 104, or over one-fifth, left the area for confinement, 27 of these going to hospitals.

Of the 359[1] who stayed in the area, only 129 were attended by a physician; in other words, almost two-thirds of these mothers had to meet the experience of childbirth without the safeguard of competent medical care. Three were entirely alone and delivered themselves, even tying and cutting the cord. Forty-six, or more than one out of every eight, were delivered by their husbands. Neighboring

[1] Including 13 who went away from home to friends or relatives elsewhere in the area for confinement. They are not discussed separately because conditions in the homes to which they went were not very different from those affecting the other mothers who stayed at home, excepting for five of these mothers who went to the house of a physician for confinement.

women—in a very few instances trained nurses, in a considerable number of cases practical nurses, but for the most part women quite untrained in obstetrics—attended 181, or over half the mothers who remained in the area for confinement.

Although in a few families childbirth was regarded as a simple and natural process, requiring no special care except what any neighbor could give, in the main the dangers of the lack of medical care were more or less realized. Nearly every neighborhood had known of a death or a narrow escape from death on account of childbirth. Five mothers had taken the precaution of going to the house of a physician in the area for confinement. Preference for an untrained attendant was seldom responsible for the lack of medical care. "We had planned to have a physician, but the snow was so bad it was impossible to send for him." "We were all packed ready to go to the city for the confinement, but storms came up, and the creek was so high we couldn't get away." "My husband rode horseback 12 miles in a bad snowstorm for the doctor, but he was away." "The roads made it impossible to get a doctor." "We intended to go to the city, but the baby came a few days before we expected him." "We couldn't get away on time, because all the autos in the neighborhood were being used for sheepshearing." These were typical reasons given why no physician had been in attendance. One mother had packed her belongings and was ready to start for the city when labor set in unexpectedly. The father left her to get a physician and some neighbors, but the baby was born while the mother was alone before anyone arrived. The physician was eight hours late.

In another case where the mother had expected to go away for confinement labor came on suddenly. Unfortunately her husband, who had delivered her first baby, was away on business across the river and could not get back because the ferry was not running. The mother was alone except for the grandmother, who was panic-stricken and could be of no help whatever, and who frightened the mother and made her nervous. The mother, however, was a very competent person, had always been interested in nursing, had delivered several of her neighbors, and knew what to do.

In another instance a young mother whose confinement came before she expected it found herself absolutely alone at childbirth and for two days after. The father, who had gone on business to the railroad a few days earlier, had arranged for a neighbor to stay with his wife. At the last minute the neighbor was unable to come, and the mother, having no one to help her, to give her nursing care, or to do her housework, had to cut and tie the cord, care for herself and the baby, and get what little food she ate for two days, at the end of which the husband returned and summoned a neighbor. This experience, which would have been terrifying at any time, was especially hard because

the mother, who was only 19 years old, was having her first baby. Fortunately she suffered no permanent ill effects, but she was weak for about six months after childbirth and did practically no work during that time.

Another mother was all alone when her first baby was born. Her husband left at noon to go for a physician, but was lost in a storm and did not get back until 6 o'clock the next morning. This was in March. The baby was born at 9 in the evening. The mother cut and tied the cord herself. She was alone through the night, the fire went out, and she had no food. She was obliged to get out of bed in the cold room to get more coverings. This was her first child and she was badly torn. A physician whom she has seen recently says that she needs an operation.

In another case a father, who could not reach a doctor, delivered his wife with the assistance of a 19-year-old girl who was living in the household. They said that they did not feel entirely helpless, because they had had some instructions from the father's brother, whose wife had had a trained nurse during a confinement in the Philippines.

Often a physician had been sent for but did not arrive on time. Such a delay is disturbing enough to a mother who has no reason to expect complications, but it is especially distressing to a mother whose pregnancy has been complicated. This was the experience of one mother, who reported that the membranes had ruptured three days before delivery, and the physician who had been called at that time was unable to tell whether the fetus was alive or dead, but feared that it was dead. At the birth, therefore, the mother, who with her two previous children had had a physician and trained nurse, was much frightened and worried when the physician did not arrive on time. A neighbor who was not even a practical nurse was with her at confinement. A woman who had had more experience with confinement cases was sent for and arrived 20 minutes late, but in time to cut and tie the cord. The physician did not reach the mother until five hours after the baby was born, but came in time to deliver the afterbirth. Fortunately the baby was in good condition, and, though it was a dry birth, the delivery was not difficult.

In 30 instances, the physicians arrived late but in time to be of some service, either in cutting and tying the cord, delivering the afterbirth, or in looking after the mother. In a few instances, they arrived within an hour after the birth, and in others their tardiness ranged from 1 to 24 hours. In 56 additional cases unsuccessful attempts were made to secure a physician. In 12 of these the physicians did not answer the calls at all, for one reason or another—sometimes, doubtless, because they knew they could not reach their patients in time. In 44 instances they arrived too late to perform any service for the mother.

Many families who live great distances from a physician know in advance that it would be little short of miraculous if he should arrive on time: occasionally, in such cases, the father will send for a physician for the reassurance which even a late visit may give; but usually when the physician is so inaccessible the family can not afford to spend the money. "There was too little chance of his getting here on time; and besides it would have cost $50." "The ice was coming in the river, and the ferry couldn't get across; so we decided not to try to get a doctor; and it's very expensive; the doctor charges $75 to come here." Such were the usual comments.

Bad weather, swollen rivers and creeks, impassable roads, which make it hard or impossible to secure a physician at certain times of the year, also complicate the obtaining of less skilled care, such as a midwife or practical nurse. One family's experience illustrates several of the problems of securing even such care as a mother would consider second best. Knowing that it would be impossible to secure a physician (the nearest one being 40 miles away and across the river, which at that time was not navigable because of the ice), the mother had engaged a neighbor who was looked upon in the community as a midwife. However, labor set in at midnight a few days before the confinement was expected. The father, afraid to leave the mother, sent his oldest son, then 13 years old, out into the blizzard, for the midwife. The boy took a wagon and team, stopped to get a neighbor's boy of the same age to help him find the way, and together these two children set out. They soon were lost in the storm. Meanwhile, the mother was growing very anxious about the boys. "I was more worried about them than about my confinement," she said, in telling of her experiences. After a long while the father stepped outside and heard some one shouting near the house.

The two boys, after going a little distance, had got lost in the bad lands. They climbed out of the wagon to see if they could find a road, but the snow had covered every familiar landmark. They felt about for a while in the pitch dark and then could not find even the team and wagon. After wandering around for a long time, by great good luck they happened to stray near home. The next day, when they went out to look for the team, wagon tracks and their footprints were found on the edge of a 30-foot cut bank. "They escaped it by a miracle," said the father. "If we had been in the country longer we would have known better than to send them out on such a night. But our boy had always had such a good sense of direction and he thought he knew the way."

Meanwhile, the father, who knew nothing about the care of a woman in confinement, delivered his wife, with fear and trepidation. (Her previous confinements had all been attended by a physician.)

"Altogether it was a terrifying time," he said. The next day the midwife was sent for to see if the mother was in good condition.

Most of the fathers who had to deliver their wives felt that the danger of such lack of care was too great to be risked again if in any way it could be avoided. One father said he would never attend a confinement again, but that he would start to the hospital with his wife six months before confinement was expected. He feels that no price is too high to pay for adequate confinement care.

One local physician thought that the women, perhaps because of the character of their life in the area, had easier confinements and were less likely to suffer certain complications (such as might be expected to follow their poor confinement care) than would city women if the latter were subjected to the same conditions. However, there were many mothers and babies who suffered very serious results following the lack of good confinement care. Again and again mothers would say, "I've never been well since." Eight of the mothers covered by the inquiry had died as a result of childbirth, 10 babies had been stillborn and 12 had died under 2 weeks of age, and there were 39 premature deliveries.[1]

Women attendants.

One hundred and eighty-one of the mothers who remained in the area for confinement were attended by women who in a few instances were trained or practical nurses, but in a great majority of cases were only untrained neighbors or relatives. In many cases the attendant was a member of the household and in most of the others lived within 5 miles of the mother. Altogether, 122 women attended these 181 confinements. The question naturally arises as to how these attendants were equipped for the care of mothers at childbirth.

There are no licensed midwives in the area. When a doctor can not be secured, a neighbor is usually called in to care for the mother through her confinement. As a rule, she attends as a favor, often going with fear and misgivings, and only because no one else can be found and "a woman can't be left alone at such a time." She seldom charges for her services. "One neighbor does it for another out here," one mother remarked. Gradually some of the more self-reliant women acquire a reputation for skill in such cases and are called upon so often that they become the main reliance of a neighborhood and decide to consider their services as at least professional nursing and to charge a fee. This fee usually ranges from the most common charge of $1.50 or $2 a day, with no charge for delivery, to $25 a week or, in a few instances, $25 for the delivery alone.

[1] See discussion of Complications, Maternal Mortality, and Infant Mortality, pp. 39, 41, and 70.

Of perhaps 25 or 30 women who in the various neighborhoods had the reputation of caring for confinement cases, 10 were visited by the Children's Bureau agents and questioned about their work. Few had attended more than 2 cases in the past year, though 1 reported 22 cases in the past five years, of which 2 had been attended by a physician also; and 1 reported 5; 1, "about 6"; and 1, 7 in the past year. Several had had some training in a hospital or as practical nurses before they moved into the area studied. One was a graduate trained nurse (she had, however, attended confinements without a physician only twice in her three years of residence in the district). Those who had practiced before coming to the area studied had almost never cared for a mother at confinement, except as a nurse where there was a physician in attendance, and they all preferred to work with a physician. The trained nurse refuses to care for a case unless a physician is in attendance except in an emergency—where the physician does not arrive in time or for some reason can not be secured.

Even when a fee is charged the service is performed as an accommodation, and in many other cases with reluctance, especially where an attendant realizes the dangers of childbirth. One woman, who does not wish to attend confinement cases and does so only when no one else can be secured, said she knew what to do if everything went right, but would not have the least idea how to proceed if anything were abnormal. She had once had an abnormal case and the baby had died, partly on account of the mother's condition and partly because a physician could not be secured in time and she had not known what to do. This woman attended five cases in the year preceding the inquiry. When her own baby was born she went away for confinement because there was no one in the neighborhood whom she could trust to deliver her. Another woman said, "At first I used to be very much afraid, but since I've watched the doctor and have delivered a few cases myself I'm not afraid any more."

In every instance but one these women said that in addition to giving nursing care they did the housework in case the mother had no one else to do it; and a few of them considered the housework part of their regular duties. The majority remained with the mothers from nine days to two weeks, though several reported that they stayed only a few days, as short a time as possible, in order to get back to their own households. Several of the women limited their practice to their own children, grandchildren, and other near relations.

Most of these attendants do not feel competent to give advice on infant care, except such advice as one neighbor will give another. Several were very eager to get the Children's Bureau pamphlets on Infant Care and Prenatal Care that they might answer the many

questions which are often asked them. None of them gave any prenatal care or advice, except occasionally to tell mothers what supplies to prepare for confinement, and in one instance to urge mothers to have a physician make urinalyses.

Nearly all the women interviewed realized the need, if not of complete asepsis, at least of cleanliness in caring for their patients. Antiseptics such as boric acid, carbolic acid, lysol, and mercury bichloride were reported. One woman had persuaded a little country store to keep bichloride tablets in stock. Nearly all used scorched linen and boric acid on the cord and a boric acid solution to wash the baby's eyes. None of them, however, reported a regular equipment; and, though they usually carried antiseptics, nearly all depended for other supplies on what their patients had in the house.

It is obvious that these women occupy a very different position in their neighborhoods from that of a city midwife, or the midwives of, let us say, a southern rural community. For the most part they realize their limitations, and do not attempt to interfere with the natural course of delivery or to "doctor" their patients with herbs and such multitudinous home remedies as, for example, were reported by the midwives in the North Carolina study. Only one woman reported the use of any but the most common home remedies. In addition to the use of boric acid she washes the eyes of new-born babies with a rag soaked in honey and sage; in case of a laceration she applies an egg fried in lard without salt, and for sore breasts she advises the application of hot pancakes.

Almost all these women realized that maternity care was a great problem in their neighborhood, and they approved of the idea of county public-health nurses as a first step at least toward the solution of the problem.

AFTER CARE BY A PHYSICIAN.

When a woman secures a physician for confinement in the area studied of how much oversight and protection is she thus assured? Except when the physician is late (there were 30 such cases) her actual delivery has the advantage of medical attention. In this study all mothers whose doctors arrived in time to perform any service have been counted attended by physicians. It is possible that before the physician arrives unskilled handling may have brought about infection or other complications, but at any rate even a late physician is often a great safeguard.

After care by a physician, which in standard practice in cities is considered a part of confinement care and consists of at least from 4 to 10 postnatal visits, is nonexistent in the area studied, except for the six cases where the mother stayed, at the time of confine-

ment, in the house of the physician.[1] Indeed, except in 12 cases where complications developed and 32 cases where the mother lived or was staying within 5 miles of the physician, only 8 mothers were visited after confinement, and each of these women was visited only once. The tremendous distances and the small number of physicians for a great area would in themselves explain the lack of postnatal care. When it takes the greater part of a day and sometimes longer for the physician to reach his patients, fees are naturally high.[2] A physician would not make so expensive a visit unless called by the family; most homesteaders are by no means well-to-do and find it hard to meet the expense of the original confinement visit, much less any postnatal visits which do not seem to them absolutely necessary. Even if the importance of postnatal care were realized its almost prohibitive expense would lead many families to take the chance that the mothers would recover without complications, provided the birth had not been difficult.

NURSING CARE.

It happened that among the homesteaders there were several graduate nurses, and several other nurses who had had some training in hospitals but who had not graduated. Although most of these women were married and had families to care for, and none of them had come to the area to practice, they were, nevertheless, usually available in cases of emergency in their various neighborhoods, and practiced now and then, either as an accommodation to their neighbors or because they needed money. In addition to these, there were a number of practical nurses[3] whose experiences had in many cases made their services more valuable than those of persons quite untrained.

Of the 359 mothers who remained in the area for confinement,[4] 14 had been cared for by graduate nurses and 113 others by women who may be considered partly trained. In other words, over one-third of these mothers had had trained or partly trained nursing care—a rather unexpected showing, considering their lack of other items of maternity care. Indeed, a larger proportion of the mothers in the Montana area received trained or semitrained care than of the mothers in the Kansas study, though the latter had on the whole much better maternity care.

However, nearly two-thirds of the mothers did not have the safeguard of even semitrained care. Fifty-five women relied entirely upon the members of their households—very often only their hus-

[1] Including one in which the mother was the wife of a physician.
[2] See section on Cost of Childbirth, p. 49.
[3] See discussion of Women Attendants, p. 31.
[4] See discussion of Mothers Who Left the Area for Confinement, p. 47.

bands. In busy seasons, especially during harvest or at lambing time or during a round-up, it is often impossible for the neighbors to leave their work. Usually, however, the kindliness of neighbors is depended upon. The great majority of the mothers (176) were nursed by neighbors, friends, or relations who were not members of their households. One mother, whose husband was away on a freighting trip, was quite without nursing care. The neighbor to whose house she had gone for confinement was suddenly bedridden by an accident, and the mother had to leave her bed to get food for herself and the other woman for the first two days, after which she got up. She said she had such a hard time that she has never been well since. Several women were practically alone for the first day or two after confinement; consequently their nursing care did not begin when it was most needed.

Very frequently the care given by the father or another member of the household consists only in the bringing of meals to the mother and can hardly be considered nursing care. Thus one mother reported that her baby was born at lambing time, and on the third day after her confinement a crew of five men came to help with lambing and stayed 10 days. The father had to work night and day during this time, doing what housework was done and cooking for the lambing crew in addition to his farm work; and so the mother had only occasional attention. The mother bathed the baby and cared for herself. On the twelfth day she tried to get up, but had fever and had to go back to bed.

Often the neighbors who are kind enough to nurse the mother, and even some of the practical nurses, are quite unskilled. While they may perform such simple services as bathing and dressing the baby or preparing the mother's meals, they would be unable to recognize as important many symptoms of complications which a trained nurse would immediately know needed a physician's attention. Moreover, in many instances the neighbors do not stay at the mother's home, but come in for a few hours each day and combine a little nursing care with a neighborly visit. Thus, if a mother should develop some serious symptoms before or after the neighbor called, or, worse still, in the night, the father would have to leave her by herself while he "wrangled" and saddled a horse, rode a long distance to the nearest house where there was a woman, waited for her to get ready to come back with him, and rode back home, or perhaps left the neighbor to go to his wife alone while he rode for the doctor.

The importance of good nursing care in any community during the confinement period can not be too forcibly emphasized. But in such a county as this one in Montana how such care can be made accessible to every woman in childbirth is an especially importunate problem,

PRENATAL CARE.

The urgent need for prenatal care has been emphasized in previous publications of the bureau. Dr. Grace L. Meigs, in Maternal Mortality,[1] states in regard to complications of pregnancy and childbirth:

A large number of these complications can be prevented through proper hygiene and supervision during pregnancy and through skilled care at labor. Certain other complications which can not be prevented can be detected before serious harm is done, and treatment can be given which will save the mother's life. We can see this more clearly if we consider as examples two of the most important complications.

Puerperal albuminuria and convulsions, called also eclampsia, or toxemia of pregnancy, is a disease which occurs most frequently during pregnancy but may occur at or following confinement. It is a relatively frequent complication among women bearing their first children. When fully established its chief symptoms are convulsions and unconsciousness. In the early stages of the disease the symptoms are slight puffiness of the face, hands, and feet; headache; albumen in the urine; and usually a rise in blood pressure. Very often proper treatment and diet at the beginning of such early symptoms may prevent the development of the disease; but in many cases where the disease is well established before the physician is consulted, the woman and baby can not be saved by any treatment. In the prevention of deaths from this cause it is essential, therefore, that each woman, especially each woman bearing her first child, should know what she can do, by proper hygiene and diet, to prevent the disease; that she should know the meaning of these early symptoms if they arise, so that she may seek at once the advice of her doctor; and that she should have regular supervision during pregnancy, with examination of the urine at intervals.

Some obstruction to labor in the small size or abnormal shape of the pelvic canal causes many deaths of mothers included in the class "other accidents of labor" and also many stillbirths. If such difficulty is discovered before labor, proper treatment will in almost all cases insure the life of mother and child; if it is not discovered until labor has begun, or perhaps until it has continued for many hours, the danger to both is greatly increased. Every woman, therefore, should have during pregnancy—and above all during her first pregnancy—an examination in which measurements are made to enable the physician to judge whether or not there will be any obstruction to labor. A case in which a complication of this kind is found requires the greatest skill and experience in treatment, but with such treatment the life and health of the mother are almost always safe.

These two examples will suffice. In the same way it could be shown, with regard to all the other complications of pregnancy and labor, that those which can not be prevented can be treated successfully in most cases if detected in time.

It can be regarded, then, as a generally accepted fact that all illness and death connected with childbearing is, to a certain and

[1] Maternal Mortality, pp. 12–13. U. S. Children's Bureau Publication No. 19.

large degree, preventable through the application of the scientific knowledge which is now well established.

Even in cities where there has been active propaganda on behalf of prenatal care the importance and necessity of such care is not generally realized. Therefore it is not surprising that in the remote area studied where there has been no such propaganda more than three-fourths of the mothers had no prenatal care whatever—saw no physician, had no physical examination, measurements, or urinalysis.

Several mothers expressed surprise at being asked whether they had seen a physician or had any prenatal care. "No; why should I? I was feeling all right."

Indeed, considering the inaccessibility of medical care, the difficulties imposed by weather, roads, distances, and expense, it is surprising and encouraging to learn that nearly one-fourth of the mothers had secured at least a little prenatal care. However, when the extent and quality of this care is analyzed, the showing is not so favorable.

In order to measure and compare prenatal care in different communities, certain standards of what constitutes adequate and fair prenatal care have been drawn up by the bureau, after consultation with Dr. J. Whitridge Williams, professor of obstetrics at Johns Hopkins Univeristy.[1] By these standards, adequate care—which would include as a minimum an obstetrical examination; continued supervision by a physician through at least the last five months of pregnancy; monthly examination of the urine at least through the last five months; and, in case of a first pregnancy, measurement of the pelvis to determine whether any structural deformity exists which is likely to interfere with birth—was afforded no mother in the area studied. Twenty-two mothers received what is classified as fair care—which includes an obstetrical examination; from one to four urinalyses at monthly intervals; some supervision by a physician; and, in the case of a primipara, pelvic measurements. Anything less than this is considered an inadequate protection for the mother against those complications of pregnancy and childbirth which are preventable. Eighty-six mothers received only inadequate care, which in a great many instances consisted of a single visit to the physician and sometimes of submitting one sample of urine during pregnancy—a dangerously inadequate protection.

Of all the mothers, less than 1 in 4 had consulted a physician, and over three-fifths of these had consulted him only once; about 1 in 10

[1] Moore, Elizabeth: Maternity and Infant Care in a Rural County in Kansas, p. 28. U. S. Children's Bureau Publication No. 26, Rural Child Welfare Series No. 1. Washington, 1917.

had had an obstetrical examination; and only 1 in 7 had urinalysis. Of the 127 primiparæ,[1] only 3 reported pelvic measurements.

Instances in which a mother was ill, but, even so, secured no prenatal care were not uncommon. In this group, for example, was one who had had many slight uterine hemorrhages all through pregnancy; another mother, whose previous pregnancy had resulted in a miscarriage, had had such pain in her limbs that for several months before the baby's birth she could hardly walk. This mother was again pregnant at the time the agent from the Children's Bureau visited her and was again suffering from badly swollen limbs, but had had no medical treatment nor advice.

Another mother who throughout pregnancy was very ill, weak, and listless, and who suffered from headaches, swollen hands and feet, and numbness, had no prenatal care. She was again pregnant at the time of the survey and was suffering from the same symptoms, and, though eager to consult a physician, felt she could not do so because there was none within 35 miles, and the trip would be both difficult and expensive beyond the family's means.

Another woman, who reported an "extremely nervous" pregnancy, took "spikenard," on the recommendation of a neighbor, but had no prenatal care.

Sometimes mothers reported the use of patent medicine which they saw advertised in newspapers. Thus, one mother who had had kidney trouble before her marriage and was ill throughout her pregnancy, had no medical care, but bought some "Easy Childbirth Tablets." Another, who had suffered much from nausea, secured no prenatal care, but wrote to a Texas physician who advertised in a foreign newspaper and who sent the mother some pills. On the whole, however, comparatively little "home doctoring" was reported, only 46 mothers, or 1 in 10, having used any home remedies. Such as were used were for the most part olive oil, either taken internally or applied externally, and simple cathartics, though several patent medicines—whose value was, to say the least, doubtful—were reported.

Several mothers whose pregnancies were complicated made only one or two visits to a physician, in spite of their dangerous condition. Thus, one woman who began to have profuse hemorrhages at six months consulted a physician and had a urinalysis only shortly before her baby—born prematurely at seven months—was delivered. She did not realize the importance of the doctor's advice to rest, and continued her work up to the day the baby was born. The prematurity of this baby and its death at the age of 7 hours could probably have been prevented had the mother had good prenatal care throughout her pregnancy, and had she followed the doctor's advice.

[1] Excluding three about whom no reports were available.

It is significant that of the mothers who obtained prenatal care, only 21 sought it because of discomforts or complications of pregnancy. And often women who had no prenatal care realized its importance, but had been unable to secure it, sometimes because of its inaccessibility, again because of its expense. One mother, who with her previous children had had good prenatal care, including monthly urinalysis, was much disturbed because she could not protect herself and her last child with the safeguards such care would have provided.

A fairly large proportion of the mothers had realized their need of instruction about prenatal care. One hundred and fifty-five, or one-third, reported that they had read books or pamphlets on this subject, sometimes borrowing such reading matter from their neighbors. A list of literature made up from the mothers' reports, contained such standard books as Slemmons's The Prospective Mother; Practical Nursing, by Pope and Maxwell; the Children's Bureau publication, Prenatal Care; and others. Several women's periodicals having "Advice to Mothers" departments were read by many of the women. "Doctor books," the names of which the mothers had forgotten, were frequently reported. There were also some books, standard in their day, but not containing the latest findings of medical science on the subject of prenatal care; and there were a few fairly good pamphlets, published as advertising matter. On the other hand, publications advertising patent medicines were common, and many books which gave dangerous advice—one of them, for example, advising mothers to get up on the second day after confinement—were for several women the only available sources of information.

However, even though much of the reading was indiscriminate and ill-chosen, the very fact that the printed page was sought by one-third of the mothers as a guide is an index to the intelligence of the community. The eagerness of the mothers to secure the Children's Bureau publication on this subject presages well their acceptance of further instruction in prenatal care, if such should be offered by county public-health nurses.

COMPLICATIONS.

It is never possible to get complete data on the complications of pregnancy and confinement in a community, and it is especially difficult in such an area as the one studied, where many mothers had secured no medical attention and no accurate diagnosis had been made. Unless a physician had informed her, a mother might not know of a laceration resulting from confinement; might not know of puerperal fever; and might accept as a normal part of childbearing many

symptoms which, with good prenatal and confinement care, she might have been spared.

However, there are several complications which any mother having experienced them would recognize. These are Cæsarean section, convulsions, premature delivery, stillbirth, and instrumental delivery. Seventy-four, or almost one-sixth of the women, reported at least one of these complications, nine of them reporting two and one reporting three. There were 39 premature deliveries, 10 stillbirths, and 7 cases of convulsions. Twenty-nine instrumental deliveries were also reported. That one-sixth of the mothers should have suffered these complications at childbirth is bad enough; yet this statement does not even begin to tell the whole story. These complications are the most easily recognized, and are very serious, but not necessarily the most dangerous. The greatest single cause of death in childbirth—puerperal septicemia—is omitted.

Although, as has been said, no attempt was made to secure statistics on any complications except the five already listed, many mothers reported symptoms of very serious diseases, either in addition to those listed above or separately. The significance of the dreary reiteration of such statements as "I have not been well since" can not be conveyed by statistics. Difficult presentations, prolonged labor, and lacerations were among the most common complications reported. One mother reported labor that lasted three days, after which she had fainting spells for one hour. Another mother was badly lacerated and the laceration was not repaired. She was unable to get out of bed for two and a half weeks, and it was many weeks before she could walk even around the house.

Many women had had severe hemorrhages. One mother, whose baby was born four hours before the physician arrived, was attended by a neighbor who had never had any previous experience in confinement cases. A hemorrhage followed the delivery and the mother said she nearly bled to death before the physician reached her. Several mothers had had chills or chills and fever after confinement, and one, whose delivery had been a shoulder presentation, developed a chill two weeks after confinement. The practical nurse who delivered her had told her that this was "a sure symptom of blood poisoning." No physician was engaged even then, and douches were given for several days without a physician's supervision. The mother remained in bed for two days, but was ill for two weeks. At the time of the Children's Bureau inquiry, over a year later, she was still in poor health.

"Blood poisoning" was frequently reported. One mother said she almost died; another, who did not consider a physician necessary at childbirth, felt very ill three days after delivery. Only upon the urgent advice of the nurse who had attended her, however, did she

finally send for a physician who diagnosed "blood poisoning, due to retention of part of the placenta." She was confined to her bed for 21 days and unable to resume her housework for over a month. Another mother who had had no prenatal care had three convulsions just preceding delivery, before the physician reached her, and four after he arrived. She realizes now how dangerous her situation was and that it probably could have been avoided had she secured good prenatal care.

Another mother, who said she had "kidney trouble" during pregnancy and had suffered from vertigo, had had no prenatal care. Her baby was born prematurely at seven months. Two hours after labor began a physician who lived over 20 miles away was sent for, but he did not reach the house until after the mother had had seven convulsions and the baby had been born, the father having performed all services. The mother was confined to her bed for three weeks afterwards.

Still another mother—a primipara—had an even narrower escape from death. During her girlhood she had had kidney trouble, and, though she was ill throughout pregnancy, she, nevertheless, had secured no prenatal care. Just before labor she suffered with severe nausea and vertigo and became blind. As soon as labor set in she began having convulsions. The father summoned the neighbors—one of whom was a practical nurse—and then went for the nearest physician, who lived 25 miles away. When the father reached his house the physician was out on another case. The mother had been in labor and had had convulsions for 36 hours before he arrived. The practical nurse had administered chloroform several times, but was afraid to continue on her own responsibility. The physician immediately delivered the baby, which was stillborn, with instruments. The blindness, convulsions, and an unconscious condition continued until the fourth day, but the doctor made no postnatal visits, nor did he repair a severe laceration which occurred during the birth. The neighbors took turns nursing the mother for the first four days. On the fifth day a graduate nurse was secured. The mother's sight gradually returned, but at the time the information was secured by the Children's Bureau agent, over five months afterwards, the mother reported that she had "not had a well day since."[1]

MATERNAL MORTALITY.

It is important to know what proportion of mothers in a given community die as a result of childbirth. The maternal mortality rate is commonly stated as the number of such deaths compared with the number of live-born infants in a given period.

[1] See also discussion of Prenatal Care, p. 36.

During the five years covered by the Children's Bureau survey there were 628 live births in the district, and 8 mothers died from diseases of pregnancy or confinement.[1] In other words, the "cost" in maternal deaths for this number of live-born infants was 12.7 per 1,000.

Although the figures on which this death rate is based are small, it may, nevertheless, be worth while to compare it with other available statistics. The corresponding maternal mortality rate for the United States birth-registration area in 1915 was 6.6,[2] a rate only about half as high as that of the Montana area studied. And this rate for the United States birth-registration area is higher than the rate of any one of 15 foreign countries for which the figures for the year 1910 were secured.[3]

Of these countries, Scotland has the highest rate, 5.7, and Italy the lowest rate, 2.4 per 1,000 live births. The Montana district's shockingly high rate of 12.7 is more than five times as high as Italy's.

The risk to the mother may be stated as the number of maternal deaths in relation to the total number of pregnancies resulting in live or stillbirths. During the five years covered by the survey the total confinements to all mothers numbered 634. Seven mothers died, excluding one whose death followed a miscarriage.[4] This gives the high mortality rate of 11 per 1,000 confinements.

A comparison with other rural areas where similar studies have been made by the bureau is significant. In the Kansas area only 1 in 349 confinements terminated fatally,[5] a rate of 2.9 per 1,000; in the Wisconsin areas only 4 out of 661, or a rate of 6 per 1,000. In other words, childbirth is nearly four times as fatal to mothers in the area studied in Montana as in the Kansas area, and nearly twice as fatal as in the Wisconsin areas.

These rates are especially illuminating when considered in relation to the proportion of mothers attended by physicians, taking attendance by physician as an index to the quality of care a mother receives. Nearly all the Kansas mothers—95 per cent—and 68 per cent of the Wisconsin mothers were delivered by physicians, whereas

[1] This does not include the death of one mother who did not recover after childbirth, but whose death certificate gave Bright's disease as the cause of death, and the death of another which occurred during the investigation, but after the period which the study covered, i. e., Aug. 1, 1912, to July 31, 1917.

[2] Computed from figures for the birth registration area of 1915, U. S. Bureau of the Census, Birth Statistics, 1915, p. 10; and Mortality Statistics, 1915, pp. 298–303.

[3] See Appendix A, Table I, p. 95.

[4] Owing to the fact that the reports of miscarriages were not complete they have been excluded from the number of confinements; to secure a "probability of dying" to correspond, the death of the mother following the miscarriage must be omitted. This death was included above in the statement of the "cost" in maternal deaths corresponding to 1,000 live births.

[5] Excluding two deaths which followed miscarriages.

only 47 per cent of the 463 Montana mothers [1] had the advantage of delivery by a physician.

Because of the knowledge that deaths from childbirth are largely preventable it will be significant to consider the kind of prenatal, confinement, and postnatal care afforded to these seven mothers.

In one family the mother was confined in midwinter. No physician had been engaged, though after a previous confinement where there was no trained attendant the mother had suffered a serious illness of six weeks' duration. The night before birth the family and a neighbor sat up late reading a "doctor book." The mother had had no prenatal care whatever. When the baby was born the father and a neighbor cut and tied the cord. Half an hour after the delivery the mother began to feel very ill. She became rapidly worse, and the father, three hours later, started for the nearest physician, who lived 15 miles away. The snow was deep and it took two teams of two horses each to get the doctor and bring him to the home. But six hours before the father returned with the physician the mother died. The doctor could not be certain of the cause of death, but thought that it was internal concealed hemorrhage.

One mother had been seriously ill for several months before childbirth, with hemorrhages and weakness. A severe, unrepaired laceration due to a previous confinement added to her wretchedness. In her sixth month of pregnancy she consulted a physician, who examined her, made urinalysis, and pronounced her in a serious condition and in need of hospital attention. The husband, however, could not be persuaded that there was any danger in so natural a function as childbirth, and the mother received no further prenatal care. At confinement she suffered no labor pains but had excessive hemorrhages. The physician, who lived 35 miles away, was sent for but did not arrive for 24 hours. He diagnosed the case as placenta prævia and delivered with instruments a stillborn child that he said had been dead for at least four days. When interviewed by a Children's Bureau agent he stated that it was a case of placenta prævia; that he had thought the mother was in no danger after the child had been delivered; and that he was surprised at a later call. He believed that blood poisoning had set in because the fetus had been dead so long before delivery. The mother died on the seventh day.

Another mother, who in her previous deliveries had experienced much difficulty, did not wish to go away from home for confinement because it entailed leaving her children. She consulted a physician several times during pregnancy, and he felt that she could be safely confined at home, though he did not examine or measure her and

[1] Including those who left the area for confinement.

made no urinalysis. The mother had some instruction from a nurse. At the confinement—a breech presentation—the physician twice attempted to deliver her with instruments but did not succeed. After she had been in labor three days he realized that she could not be delivered at home, ordered an automobile, and took her to the nearest hospital, 115 miles away—a terribly long ride over rough roads—where she arrived thoroughly exhausted. The physicians called in consultation did not perform a Cæsarean section because of her condition. The following morning instruments were again applied, and a very large stillborn baby was delivered. The mother lived until the following day, when she died of exhaustion.

A young mother of 21 who was confined for the first time had had absolutely no prenatal care. Although she suffered from swollen ankles and what she believed to be kidney trouble, she had had no urinalysis and came to her confinement in every way unprepared, not even having read any instructive literature. The physician left shortly after the delivery, which had seemed to him quite normal. Six or seven hours later the mother developed convulsions. The physician lived only 10 miles away and was sent for again. He came and asked to have another physician called in, but the two physicians were unable to save the mother. She died 13 hours after the delivery.

Another primipara, who had been "ailing" all through pregnancy, attempted to relieve her discomfort with patent medicines—one a "womb and liver tonic." Three weeks before confinement she had a hemorrhage and went to a physician, who told her that she was all right, though he made no examination and gave her no treatment. The confinement was complicated, the physician said, by placenta prævia. He was with her while she suffered for three days and three nights, but did not interfere. Finally he said that another physician must be sent for. Two physicians were secured from the nearest city, 60 miles away, but the mother died just before they arrived. The child was never delivered.

Another mother, who had a history of Bright's disease, and whose death is, therefore, not included in the eight deaths resulting from childbirth, never recovered after parturition. She suffered from kidney trouble during most of her pregnancy, and in her sixth month consulted a physician. He made no examination or urinalysis, but advised that another physican be consulted. The family, however, did not follow his advice and neglected to engage a physician for the confinement, which an aunt attended. The child was stillborn. The mother did not recover, and her husband took her to the nearest city to see a physician, but "no medicine did any good." After suffering from severe headaches, temporary blindness, and swollen legs for eight months—a great part of the time confined to her bed—she died.

Two of the mothers went away for their confinements. One of these had had kidney trouble in her girlhood, and during her entire pregnancy had felt miserable, yet up to the time she went away she had not seen a physician, had had no prenatal care, no urinalysis, and no instruction about her diet or how to take care of herself. About two weeks before her confinement she felt very ill, and two days later her husband took her to her parents in another State. They also lived out in the country, 26 miles from the attendant physician, who in addition to the visit at confinement made only four later visits. The husband (who gave the information) did not know whether after reaching her parents' home the mother had seen a physician before confinement. Her baby, born prematurely, died at 2 weeks of age. The mother continued to grow worse, and about six weeks after childbirth was taken to a hospital, where, after another six weeks of suffering, she died.

The other mother who left the area for confinement was a primipara. She went to her parents in a city two months before her baby was expected. Her husband (who gave the information) did not know what care she had had, except that three physicians were present when she died of puerperal septicemia on the eighth day after childbirth.

Is the area studied in Montana exceptionally bad, or does the whole State share its deplorable rate? The available statistics are so limited that it is impossible to answer the question. Montana is not yet in the birth-registration area and was only in 1910 admitted to the death-registration area; therefore the most significant maternal mortality rate—the number of deaths per 1,000 births—can not be reckoned. However, the maternal death rate per 100,000 estimated population has been computed and can be compared with rates for other States and certain foreign countries, as can also the rates per 100,000 female population and per 100,000 female population of from 15 to 44 years of age.[1]

The death rates from diseases of pregnancy and confinement per 100,000 population in Montana, from 1910 to 1915, were:[2] 16.4, 19.9, 18.5, 19.1, 23.1, 20.4; the average[3] rate for these six years was 19.6. The Children's Bureau, in a study of maternal mortality,[4] compared

[1] See Appendix A, p. 95, for tables showing these figures and for notes on the possible sources of error. The estimate of population is based on the assumption of a constant annual increase equal to that between 1900 and 1910. In the case of a rapidly growing State like Montana these estimates may not correspond accurately to the true population. The error would be likely to increase the longer the period after the census of 1910.

[2] Based on estimated population (Bulletin of the U. S. Bureau of the Census No. 133) and deaths from diseases of pregnancy and confinement (Mortality Statistics, published annually by the U. S. Bureau of the Census).

[3] That is, the average number of deaths related to the average estimated population for the six years.

[4] Melgs, Dr. Grace L.: Maternal Mortality, Table XII, p. 56.; U. S. Children's Bureau Publication No. 19. See also Appendix A, Table I.

the average rates of 16 countries from 1900 to 1910.[1] This comparison showed Sweden with the lowest rate, losing only six mothers out of every 100,000 population, and Spain the highest, with a rate of 19.6. Montana falls to the level of Spain's unenviable place, and is one of several States that lower the rate for the whole United States registration area, which occupies the discreditable rank of fourteenth, or third from the last, in this vital international comparison.

Comparison between the maternal death rate per 100,000 population for a State which has so great a preponderance of males as has Montana, and the death rates of the New England States or of foreign countries where the preponderance is almost always female, may be misleading. But the comparison gains significance when it confines itself to the death rate per 100,000 estimated female population aged 15 to 44 years. Here Montana makes an even poorer showing. Montana's maternal death rates for the female population of the ages specified for the years 1910 to 1915 were as follows:

1910	78.9
1911	95.9
1912	89.1
1913	92.0
1914	111.4
1915	98.4

Statistics for 11 foreign countries upon which some corresponding rates could be computed are given in Table III.[2] Montana's lowest rate, 78.9, was 13.8 higher than the rate for Scotland for 1914, which was 65.14, the highest rate found for any of these countries. Her highest rate, 111.4, was nearly four times as great as the lowest rate—29.3 for Sweden in 1911—found for any of the foreign countries.

When Montana is compared on the same basis—maternal deaths per 100,000 female population aged 15 to 44 years—with the other States in the death registration area, her showing is again unfortunate. Except for 1910, the first year after her admission into the area, she has had a higher maternal death rate than any other State. In 1910 Colorado exceeded the Montana death rate by 1.6. In 1911, 1914, and 1915 her rate was over twice as great as the lowest rates for States in the registration area for the corresponding years.[3]

That many of the deaths which go to make up such rates as these could have been prevented has already been emphasized. Significant as these figures are, they do not begin to indicate the sickness, invalidism, and misery which follow poor or inadequate care in childbirth. If some means could be devised to gauge these distressing

[1] Except where figures were not available for the entire period, in which case the averages for shorter periods were used.

[2] See Appendix A, p. 96.

[3] See Appendix A, Table IV, p. 96.

results, such statistics would be forthcoming as would compel the attention of the country and would give great impetus to the movement for the protection of the Nation's childbearing mothers.

MOTHERS WHO LEFT THE AREA FOR CONFINEMENT.

The purpose of going away for confinement is almost always to secure better confinement care than can be obtained on the isolated homestead. It is, therefore, not surprising that 63, or 6 out of 10, of the 104 women who went away were delivered by a physician, and that 27, or over one-fourth, of these were confined in a hospital or maternity home; whereas of the women who stayed in the county only 36 per cent were attended by physicians, and in 23 per cent of these cases the physician was late. On the other hand, that 14 women should have taken a long trip to get good confinement care and yet should have had no physician is a somewhat unexpected finding. One of these 14 mothers was attended at confinement by her husband on the way to the city; the others were attended by a midwife, a neighbor, or a relative in the places to which they went.

Just as the proportion of confinements attended by physicians is greater among the mothers who went away, so is the extent of after care by physicians. Only one-tenth of these mothers had no postnatal visits; whereas, in addition to the 27 who were confined in a hospital, 21 had over 4 visits, and of these, 7 had 10 or more such visits; that is, 48 or well over half the women attended by physicians had more than 4 postnatal visits, whereas of the mothers who stayed in the area only 7 of those attended by physicians, or 5.4 per cent, had more than 4 postnatal visits.

The mothers who went away had an added advantage in being relieved of their household and farm tasks for a longer period before and after parturition than the mothers who stayed at home and in the kind of nursing care they received. Fifty-three per cent had trained or partly trained nursing care, whereas of those who stayed in the area only 35 per cent had such care.

Often a great struggle is made and a large debt incurred in order that a mother may go away for confinement; frequently, however, the high cost of board and room, in addition to the expensive trip, is so great that the mother can not afford to be gone long; and often there are children whom it is difficult to leave. Therefore, it is not surprising that a large number of women who plan to go away are delayed by bad weather until the time for confinement is upon them, or that they do not allow enough time to take the long trip to and from the railroad in comfort.

One family started out in a sleigh at 7 in the morning on a 60-mile ride to the hospital. Toward evening the mother began having

labor pains. They had gone too far to return home, and, deciding that it would be best to try to get to the hospital, they drove all night. The next morning at 10 o'clock the baby was born, in the snow, 10 miles from the city to which they were going. The father was the mother's only attendant, and he cut and tied the cord. They then borrowed a more comfortable vehicle from a family that lived near the road and continued their trip to the hospital, the mother carrying the baby on her lap.

A long trip over bad roads and often in bad weather is a great physical drain on a woman near the end of her pregnancy; and the return with a small baby before the mother has completely recovered her strength may be even more taxing. One mother who was feeling very ill drove into the nearest city—a five-day trip by wagon—about a month before her confinement. It snowed every day and she had a very distressing time. When she and her husband reached their destination they moved into a shack 1½ miles from town, where she tried to keep house until the time for her confinement. She was unable to do her housework, however, and had to engage help. She did not have hospital care, but a physician attended her. When the baby was 10 days old they started back on their five-day trip.

Another woman left home with her husband in November, two weeks before confinement, and after a 65-mile auto ride to the railroad went over 100 miles farther by train in order to get to a hospital. They started back before the baby was 1 month old, in some of the worst winter weather. They knew this was unwise, but the mother was so worried about the other children at home alone—who would have no way to get help if any of them should become sick—that she was unwilling to wait any longer. The 65-mile journey from the railroad took four days. One night they drove till 10 o'clock before finding a place to sleep, and they spent one whole day covering the 4 miles between two post offices, where the road, though fairly level, was so deep with snow that their car could hardly get through.

Several mothers felt that an arduous wagon trip of four or five days was fully repaid by the care which they received. "The doctor told me I could never have lived through this at home without skilled care" was a typical remark after a woman had told of a difficult instrumental delivery, prolonged labor, or some other complicated parturition in a city, where physicians, hospitals, and trained nurses were available. There were some instances, however, where a mother went not to a city but to a rural district less isolated than her homestead, or to a little town where a physician could be much more easily secured than at home, but where there was no assurance of having good confinement care.

In 14 instances mothers were not attended by a physician; in 4 of these a physician had been called but arrived too late to perform any services. In 3 cases, though the physician was late, he arrived in time to cut the cord or deliver the afterbirth. So far as the physician's attendance was concerned, most of these mothers had taken long and expensive trips almost to no purpose.

Sometimes the possibility of getting a physician is the only thing considered. One mother, three weeks before parturition, went to a little railroad village, where she lived in a shack near a physician. There was no trained nurse in the village, and when on the third day after confinement she began to have convulsions, the frightened father sent to a city 80 miles away for a trained nurse. Two days later the mother showed symptoms of returning convulsions, and the physician advised taking her to the city from which the nurse had come, where she could have hospital care. In her dangerous condition she was taken over 80 miles by train to a maternity home. She is one of many mothers who report that they have not been strong since confinement.

Obviously, when the mother goes away, the expense of securing good confinement, postnatal, and nursing care, of getting some one to do the housework and care for the children left at home is a great financial drain, possible only for families who have some capital, credit, or some means of raising money. A large percentage of the families studied were homesteading at the time of the mother's confinement. To most of these such an expense would have been very difficult if not impossible. Some means, therefore, must be devised by which good care can be provided for all childbearing mothers, whether or not they can afford to take a long and expensive journey for confinement.[1]

COST OF CHILDBIRTH.

Because a community, in any movement to supply itself with good maternity care must consider the expense in making its plans, it is very important to study the cost of childbirth, along with other problems of maternity.

Physicians' fees.

The mothers in the area studied found childbirth very costly, especially those who had a physician's service or who went away for confinement. The same conditions which make it difficult to get physicians increase the expense when they are secured. The distance, the poor roads, the fact that some of the doctors must hire automobiles to get to their patients, the time they must spend on the way to

[1] See Conclusions, p. 91; also discussion of Cost of Childbirth, p. 49.

and from patients when they ride horseback, or when a horse or team and wagon is sent for them—these things explain their high fees. Some physicians charge $1 a mile. Others charge 50 cents. The charge for confinement seems to depend chiefly not on the doctor's services but on the distance the family lives from the physician.

All cases in which it was impossible to distinguish between charges incidental to childbirth and for other illnesses; in which the mother or father had not yet received a bill; in which they had paid not in money but in produce or other gifts, the value of which they did not know, have been classified as not reported.

Of the 219 mothers attended by physicians, 5 received free care, and in 13 instances the cost was not reported. Of the remaining 201, only 30, or 15 per cent, paid less than $25; and 171, or 85 per cent, paid over this amount—22 paying $50 or more. In 18 instances the cost of prenatal care—which in most cases consisted of one visit to the physician—was included in the above figures, and also the cost of whatever postnatal care was given.[1]

The place of confinement—i. e., whether in or out of the area—seems not to affect the physicians' charges, though a slightly larger proportion of mothers staying in the area paid $25 or more; and this in spite of the fact that some of the mothers who went away had hospital care and that a much greater proportion of them had after care by their physicians.

Total immediate expenses of childbirth.

The physician's fee, though the most definite figure obtainable in an inquiry on the expense of childbirth, is only a part of the total cost. In the area studied this charge, in many instances, does not enter into the cost, because such a large percentage of mothers were not attended by physicians. Under the heading "Total immediate expenses of childbirth" are grouped the expenses for prenatal care, fees of physicians and other attendants, nursing care, and expenditure for household help on account of confinement. This, though a nearer approach to the real cost of childbirth, is still a gross understatement, because the cost of supplies, the cost of food for the persons giving nursing care or household help, the traveling expenses of those mothers who went away—all expenditures which should be charged against childbirth—are excluded.[2]

There were 44 instances in which the total immediate expenses of childbirth were not reported, and 92 others in which all the confinement and nursing care and help with housework was given free of charge, either by members of the household, or by other relatives,

[1] See After Care by a Physician, p. 33.

[2] See section on Aggregate Cost of Childbirth to Mothers Who Left the Area for Confinement, p. 51.

friends, or neighbors. When these are subtracted from the total of 463, 327 instances remain. The total immediate costs in only 94, or 28.7 per cent, of these were under $25. This is a striking contrast to the findings of the Kansas study, in which nearly half the families reported these costs as less than $25. Moreover, many of the Montana mothers in this group received care which was almost free; for example, in one instance the grandmother delivered the mother, and she and an aunt came in daily, waited on the mother, and helped her with housework. For these services each was given "a little pig worth $6." The total immediate costs for 134 women ranged from $25 to $49; for 71 women from $50 to $99; and for 28, or 1 mother in 12, $100 and over.

These figures include the expenses of mothers who went away for confinement and had hospital care; but even for them the cost of getting to the railroad, the railroad fare, and the mother's board while away from home, except board included as part of a hospital fee, are not counted in. In 5 instances the cost to mothers who had hospital care was not reported, but in the other 22 the cost of childbirth in every instance was $40 or over, and in 9 instances $100 or over. This does not surprise one; but it is surprising to learn that of the 243 mothers from whom reports were obtained and who did not go away for confinement or did not receive free confinement care, 59, or nearly one-fourth, paid $50 or more, and 15 paid $100 and over.

The figures for the total immediate costs are much lower than they would have been if in many cases some free service had not been given; for example, free attendance at birth, free nursing service, or free help with housework.

Aggregate cost of childbirth to mothers who left the area for confinement.

It was possible in 19 instances in which the mothers went away for confinement to secure statements or estimates of the aggregate costs, including railroad fare, board, cost of household help on the homestead while the mother was away, etc. In all but 4 of these the aggregate cost was $150 or over, and in 2 instances $700 or more. No attempt has been made to tabulate these estimates in detail because the items they include vary greatly with the individual families. Some mothers who went away for the purpose of getting better care than they could have had at home combined a visit to a relation with their journey to secure good confinement care. These mothers usually paid greater railroad fares than those who went to the nearest city; but, on the other hand, they often paid nothing for board. Some families had to pay transportation to the railroad; others used their own vehicles and made no money outlay for the

trip. The length of time the mothers stayed away from home and the illnesses and complications of confinement were among the factors which made it impossible to give with accuracy the aggregate cost.

It is thought, however, that the following typical statements will show the great expense to which many of the parents were subjected. Each statement gives the items covered by the aggregate:

Aggregate cost at least $240. Of this, the "total immediate costs"—i. e., for attendant's fees, nursing, and housework—were $105. Besides this, the aggregate includes $35 for rent and $100 for housekeeping expenses for four of the five months the mother was away. The first four months were spent in the nearest city; during the fifth, the mother visited relations in Wisconsin. The aggregate does not include the cost of transportation to and from the nearest city nor, of course, the railroad fare to and from Wisconsin.

Aggregate cost $180. Of this, the total immediate costs were $100, and $80 covered the stage fare to and from the nearest city and board while in the city. The mother went to the city five days before confinement and stayed two weeks after. She then left for a near-by town, where she visited her parents for four weeks.

Aggregate cost $225. Of this, $60 covered railroad fare and board. The mother spent 11 days in a hospital, and then visited her parents, but paid board while with them. She was away from home for two and one-half months.

MOTHER'S WORK IN RELATION TO CHILDBEARING.

That healthy childbearing mothers during their entire pregnancy should keep fully occupied with work which affords them varied exercise, but which does not unduly tax their strength, is now the consensus of opinion among leading obstetricians. Ordinary housework and many of the chores on a farm afford mothers the opportunity for the necessary exercise; but some household tasks and many farm occupations demand heavy lifting or cramped posture or other excessive muscular exertion and entail hazards to the pregnant woman. This is at present too little realized by the women themselves, their husbands, and by the community as a whole.

In the area studied all the mothers but 2—of whom 1 was insane and the other a chronic invalid—did housework, and all except 11 reported washing as part of their usual work during pregnancy or after childbirth or both. In addition to their regular housework, more than half the mothers cooked or did other work for hired help. These services were, as a rule, of brief duration, but so arduous while they lasted that they deserve special mention. Nearly all the women—92 per cent—reported some chores, such as milking, churning, gardening, care of chickens, care of stock, carrying water, etc.; 76 women reported both chores and field work.

Perhaps no other occupation is so difficult to measure, either in regard to the effort it consumes or to its effect upon women as housework. The number of persons in a household; how many of them help the mother with her work; how many demand care; what hired help a mother can employ; the size and construction of the house; the conveniences and labor-saving devices; the location of the water supply; whether separating, churning, and butter making are among her undertakings—these are a few of the numberless factors in household labor. Indeed, even the weather and the season of the year affect women's work, especially in the country and in such an area as the one studied, where high winds and dust storms are to be reckoned with; and where in certain months extra tasks, such as cooking for a round-up, for a lambing crew, or for harvest hands are added to a mother's regular housework.

Again, especially among the older settlers, the "custom of the country" of hospitality to passers-by, whether friends or strangers, is a very considerable tax on a housewife's strength. One mother

whose husband is fairly prosperous said that the first Sunday after she moved onto the homestead, before she was settled, 30 persons, all strangers to her, "dropped in for dinner." Now, she said, guests do not come as often as they did, for a road house has been opened near by; yet, she often has from 10 to 15 extra persons at meals. Another mother, who is also an "old settler," says that people frequently stop for meals and lodging. She sometimes has 12 or 14 to dinner. Nevertheless, though such large numbers of guests, or even smaller numbers, add materially to women's work, very few of the women in this western country would be willing to save labor by limiting their hospitality.

The regular housework as it is done by most of the mothers is in itself not very extensive. The houses are small, most of them one or two room cabins or shacks, with a minimum of furniture. When of sod, unless they are plastered inside, they are hard to keep clean, because the sod gets very dry and dust keeps dropping into the room. To minimize the dirt this creates many women line their walls and ceiling with cloth, gunny sacking, or newspapers. One woman said that for a while she had sprinkled the walls with water, but that she was obliged to discontinue this practice because the water had to be hauled a mile in summer and was too scarce and precious to be used in this way. This house was neatly lined with newspapers. The advantages, so far as work is concerned, which the mothers have in a small house and simple furnishings are offset by the difficulties which crowding entails, by the scarcity of water, and by the lack of conveniences or labor-saving devices.[1]

HELP WITH HOUSEWORK.

Only 10 mothers regularly employed hired household help. Nearly all did their housework alone, or with the assistance of their husbands or other members of the family. One hundred and fifty-three, or less than half the mothers who were confined at home, had hired help with housework at the time of confinement. In 75 instances members of the household did the usual work of the mothers, and of these, 45 fathers did what housework was done until their wives resumed the household tasks. In 48 instances a relation, neighbor, or friend stayed with the mother or came in daily to do all the work, and in 46 other instances neighbors came in to assist the father or other members of the household with the work.

Sometimes several persons helped a mother with her work at the confinement period. In one case a woman came when the baby was 6 hours old and stayed 28 hours, doing the housework and taking care of the mother and baby. When this neighbor left, a young girl

[1] See discussion of Housing and Sanitation, p. 61.

of 15 came and stayed one week, and she returned later for one day to do the washing. All this service was given free.

Even the women who were paid for their services performed them chiefly as an accommodation. In almost every case, the woman recorded as "hired help" also gave what nursing care the mothers received; or, to put it the other way around, the women who were hired for nursing care also did the housework, and in a large number of cases the same persons also gave the confinement care. For the most part, they stayed with the mother only a very short time, about half remaining less than two weeks. In about two-thirds of the instances their work was supplemented by a neighbor or a member of the family.

Even the well-to-do families and those who are very eager to hire some one to help with their work find it practically impossible to secure a servant, either at the time of confinement or at other times. One woman who was ill two months after childbirth had to get up out of bed to cook for 13 thrashers, who stayed four days. Most of the women in the area are homesteaders with households of their own to look after, and they would not have the time or inclination to supplement their income by domestic service for other families. In an emergency they will almost always "help out," occasionally accepting pay. This is usually in the form of a gift and not necessarily commensurate with their services. More often, however, they prefer a return service which is also given "as an accommodation."

CONVENIENCES AND LABOR-SAVING DEVICES.

Except for sewing machines, which were found in 322 households, or 7 in 10, there was a great dearth of conveniences. Even the families who are fairly well to do have very few labor-saving devices. One mother who lived on an exceptionally good ranch explained that, though she could afford some of the conveniences themselves, the prohibitive cost of their transporation from the railroad placed them beyond her reach. Another family tried to buy a high chair for the baby, but found that the carriage would cost more than the chair itself. Considering the transportation difficulties and that the great majority of the families were pioneering and by no means prosperous, it is noteworthy that 168, or over one-third the mothers, owned washing machines.

Two families were supplied with running water, which in one instance was piped into the house from a flowing spring, and in the other pumped in by a windmill, but no other family had running water, though 22 had windmills.[1] On 23 homesteads there were engines, but on 5 they were used only for farm purposes and not as a

[1] See discussion of Water Supply, p. 67.

help in the housework. Eighteen mothers, however, had the advantage of engines, usually applied to the washing machine or used to pump water for household use. Two hunderd and forty-three, or over half the families, had no pump, but were obliged to dip water from a spring or river or draw it from a well, often without the aid of a windlass or pulley.

Only a few women had sinks, all but 9 out of 463 having to carry their waste water out of the house. This is laborious at any time, but especially so on wash days.

Only one family had a furnace, all the rest depending for their heat upon stoves, which in most instances were used both for cooking and housheating. In 69, or a little over one-seventh of the families, gasoline or oil stoves gave comfort to mothers, especially during the hot summers when the heat from ordinary stoves aggravates the burden of housework. Many mothers took the heat as a matter of course and considered an oil or gasoline stove as an unnecessary or too expensive innovation. One woman said, "Oil costs money, but we can get coal for nothing." When a homesteader can dig coal from the side of a butte and can pull sagebrush, which makes a quick, hot fire and which is a grievous incumbrance to him so long as it grows on his land, it is not surprising that he does not buy a gasoline or oil stove.

Lighting, like heating, is still in a crude state. All the families depend entirely upon the kerosene lamp, except 15 who had gasoline lamps. There is no electric or gas lighting in the area.

Twenty-three mothers had bread mixers, four had fireless cookers, and one had a vacuum cleaner. No mother reported the iceless refrigerator—a very easily made and great convenience.

Various methods of keeping food cool were practiced. The dugout, cave, cellar, or "root house" were the most common, 8 out of 10 of the families reporting these. Often they are nothing more than holes in the ground or in the side of a butte, but sometimes they are fairly large. Sometimes a family living in a dugout will merely dig back a little farther into the hill and thus make their cellar or storeroom. Very often the cave or "root house" is some little distance from the house, and to take supplies to and from it adds appreciably to a mother's work. A cellar under the house is less common. None of the refrigerating devices is very cold, nor is any one of them an adequate substitute for ice. The fact that one mother kept her baby in the "root house" on hot summer days, because it was the only cool place she could find, may suggest the temperature of these cellars. Thirty-eight women kept their supplies in the well or spring, 11 had ice boxes, and 10 had ice houses. One father gets ice from the creek in winter and stores it in a dugout. In summer the family takes it out as it is needed and stores it in a box in the

cellar which is used as a refrigerator. A few other devices were reported, while 35 women had no means of keeping their food cool.

CHORES AND FIELD WORK.

Four hundred and twenty-eight of the 463 mothers, or 92 per cent, reported chores as part of their usual work. Over two-thirds cared for a garden, and four-fifths raised chickens. Over one-fourth milked and two-thirds churned butter—usually for home use only, but occasionally for sale—and about one-eighth reported separating as part of their work. Nearly one-fifth cared for the stock; that is, fed and watered them.[1] Half the women carried water.

Carrying water is one of the most arduous of farm duties, especially in an area like the one studied where the water supply is often far from the house. However, when the supply is very far away the father usually hauls it by team in barrels, and the mother need carry it only from the barrel, which is usually kept near the house, into the kitchen. When the father happens to be away, however, if water is needed, the mother must attend to the hauling herself. One mother, who at the time of the investigation was in her fifth month of pregnancy, hauled practically all the water used for household purposes and for six horses, her husband being away a great deal of the time. She would hitch up, drive the wagon one-half a mile to the well, pump the water, and fill the barrels by the bucketful. The strain of lifting the heavy buckets to the top of the barrels certainly entails risk to the pregnant mother. The difficulty, whenever water is needed, of getting it from the barrels in the wagon can be imagined.

Of the 233 mothers who reported carrying water as a usual task, only 34 had the advantage of the barrels already hauled from the well or spring. In one instance the barrel was kept in the house. Of the other 199, only 26 had the source of supply within 25 feet from the house, and only 35 more had it within 50 feet. All the rest had to carry the water over 50 feet; and 96, or nearly half, had to carry it over 100 feet. Twenty-one mothers had to go a quarter of a mile or more, and in one instance over 2 miles for water.

Heavy lifting was frequently reported by mothers as the cause of a miscarriage or a stillbirth. One mother who lost a baby that was stillborn at seven months believes that the cause of this was the carrying of heavy pails of water from the well, which was half a mile from the house.

The use of melted snow or ice in winter saves[2] much hauling of water, but obviates only part of the labor of water carrying. One

[1] "Riding after cattle" on the range is classified with field work.

[2] See discussion of Water Supply, p. 67.

mother, whose husband was away much of the time, cut a large piece of snow and in lifting it in a pan to the stove strained herself and the next day had a miscarriage. This occured in the fourth month of pregnancy.

In addition to certain chores, 76 mothers, or about one-sixth, had also as part of their usual tasks field work, such as planting or helping with the planting of various crops, cutting and stacking hay, digging potatoes, plowing, harrowing, or riding after cattle. When the fathers are away—and many of them having supplementary occupations are away a great deal—the mother must bear the brunt of all the work on the homestead.

Of course, the harmfulness of any of these occupations—whether chores or field work—to a mother who is pregnant or who has a young baby depends upon the extent to which she does them and upon her strength. The facts that the great majority of the mothers had lived on a farm for at least 10 years before their marriage and that nearly half had done farm work in their girlhood are other factors which enter into the personal equation. Some mothers do very hard work and yet suffer no ill results. Others, as has been shown, after telling of some complication of pregnancy or of some serious condition after confinement, attribute the trouble to hard work during pregnancy.

CESSATION OF WORK BEFORE CHILDBIRTH.

The great majority (68 per cent) of the mothers continued up to the very day of confinement all their housework except washing, and over one-half continued even their washing. Practically the same proportion (one-half) continued their chores; 14 mothers did not cease even their field work before the day of confinement, and 24 performed some services for hired help. These figures would be even higher if cessation within one week of confinement were considered, but they are striking enough as it is. Moreover, the figures do not present a complete picture of the mother's work, because some mothers continued not one task, but several classes of tasks, up to the day of childbirth.

One mother, for instance, who, besides her housework, reported as her usual tasks milking, churning, care of chickens, gardening, and carrying water from a well over 300 feet from the house, continued all her work up to the day before confinement; and did a large washing on that day. Later in the day she walked 2 miles to a neighbor's, where labor suddenly began—all this in spite of the fact that she had not been well during pregnancy and that the membranes had ruptured five days before parturition. The father was

away, "freighting," at the time of confinement, and consequently he could not relieve the mother of her work; moreover, she had the added responsibility of things which must be done on a farm whether or not a man is there to do them. The mother remained at the neighbor's for confinement and for six days following. The day she reached home her husband, who had returned, did her work for her; but beginning the next day—that is, a week after confinement—she resumed her chores, housework, and washing, in addition to the added care of the new baby, who was not very strong. When the baby was 4 months old the mother had to cook for three harvesters for one week, and a month later for six thrashers for one day.

Another mother, in addition to her washing, other housework, and chores, cooked three meals a day for six hired men for three days preceding confinement, including the day the baby was born. She felt very ill, but was so eager to have the men finish their work before the cold weather came that she did not let anyone know how she was feeling. Labor came on suddenly on the evening of the third day and, though she had intended to have a physician attend her and was much frightened at not having medical care, the child was born so soon after the pains began that there was no time to send for a physician, and her husband delivered her. She resumed her housework and washing a week after childbirth and her chores two weeks after. This same mother, in her seventh month of pregnancy, cooked for 18 thrashers for one day.

Another mother, who had six children, of whom the oldest was 12 and the youngest 3, and whose husband during the last three months of her pregnancy was over 5 miles away herding sheep, rode to see him once a week. She made this long trip on horseback two days before the baby was born. The next day she did a large washing, though she had no washing machine or wringer, and on the morning of the day on which her baby was born she moved a heavy piece of furniture down into the cellar. Besides her housework, this mother had continued up to the day of confinement all her chores. These included caring for the garden and chickens, milking, looking after the stock, and carrying water from the well, which was 60 feet deep and a quarter of a mile away. The only aid she had during her pregnancy was from her two older children—a boy of 12 and a girl of 11.

Her new baby was born prematurely and was very small. A neighbor came and did the housework for four days after the baby was born. The mother stayed in bed only five days, and at the end of the week she was doing all her housework except washing and at the end of two weeks had resumed her washing and chores.

RESUMPTION OF WORK AFTER CHILDBIRTH.

The instances cited in the discussion of cessation of work before childbirth include statements of the time after parturition when the mothers resumed their work. These instances are by no means exceptional. Although nearly two-thirds of the mothers stayed in bed 10 days or more, 57 got up on the seventh day or sooner. Nearly one-fourth of the women were doing all their housework, except washing, before two weeks had elapsed. Forty-eight, or over one-tenth, had also done washing within this time, and 62, even a larger proportion, had resumed their chores. Before four weeks had passed nearly two-thirds of the women were doing all their housework except washing, and nearly half were doing their washing and their chores.

Seven of the mothers did field work within four weeks after childbirth and 29 had to prepare meals for hired help. The time of the year at which childbirth occurs would, of course, affect the numbers reporting either field work or services for hired help.

These figures are especially impressive when one considers that the pelvic organs do not resume their normal condition until about six weeks after parturition. Obstetricians usually prescribe 9 or 10 days in bed and complete rest for two weeks and consider that heavy work within a month after confinement imperils a woman's future health.

Mothers frequently complained of the results of hard work after confinement. One mother reported a fallen womb as a result of hard work after childbirth. Another said that three weeks after confinement she milked the cows, and instead of opening a difficult gate which she thought was too heavy for her, she lifted the full milk pails over the fence and "tore and hurt herself internally." She has not been well since that time. During the pregnancy which began about two years later she felt very miserable, and after her second child was born she did not resume her washing or her chores for six months, though she did all her housework except washing two weeks after childbirth.

Another mother, whose duties included washing and cooking for several farm hands, complaining that she "hurt her back" from hard work after confinement, remarked, "The men expect work done up just as well at that time as at any other."

It must be borne in mind, in studying a mother's work after childbirth, that the added task of caring for a newborn infant is in itself a considerable labor.

HOUSING AND SANITATION.

HOUSE CROWDING.

In this country of tremendous distances and sparse population it would seem that everybody might have those health requisites so often urged by public-health experts—plenty of room and fresh air. Yet small and crowded houses are the rule rather than the exception in the area studied; and this despite the fact that the majority of the people have high standards in regard to housing and sanitation. The scarcity of lumber and the difficulty of getting building materials, the dearth of masons and carpenters, the great distances from railroads and markets, the high cost of transportation, the lack of ready money, and the pioneer attitude that to "do without" things is a part of the homesteader's lot—these factors combine to explain the small house and the inevitable crowding.

Seven out of 10 of the homes consisted of one or two rooms, 148 having only one room, and 178 having two rooms. Wherever a tent, dugout, sleeping porch, or an outbuilding, such as a granary, bunk house, or supplementary shack was used by the family for sleeping or general living purposes, it was counted as a room and added to the number of rooms in the main dwelling. Two hundred and sixty-two families, or 57 per cent, were living, at the time of the mother's confinement, two or more persons in a room.[1]

The full force of these figures is not appreciated until they are compared with conditions elsewhere. In the bureau's infant mortality investigation in Waterbury, Conn., a crowded industrial city with a large immigrant population, a special study was made of certain districts, selected because they were typical of the worst housing conditions in the city. That study revealed that in 32 per cent of the 742 households for which reports were secured the rate of crowding was two or more persons per room.[2] The rate for the area studied in Montana, where houses are frequently over a mile apart, was nearly twice as great as that found in the congested immigrant quarters of Waterbury. To be sure, the fact that in good weather the children

[1] In this discussion, except in the illustrative stories, the figures for the number of persons always exclude the "schedule" baby, partly because in some instances the babies died and partly because the period studied covered the mother's pregnancy as well as the baby's first year of life.

[2] Hunter, Estelle B.: Infant Mortality: Results of a Field Study in Waterbury, Conn., based on births in one year. U. S. Children's Bureau Publication No. 28, Infant Mortality Series No. 7. Washington, 1918.

have all outdoors to play in, and that, except for the mothers, the members of the family spend much of their time out of doors, counteracts to some extent the evils of crowding.

The sleeping room congestion is even greater than the general house congestion. Nine out of 10 of the families slept 2 or more persons in a room; in slightly more than half the houses 3 or more persons slept in one room, and in 3 families out of every 10 the rate was 4 or more persons per sleeping room. In 27 instances there were 7 or more persons per sleeping room.

The number of persons per room or per sleeping room is only a rough index to housing congestion and offers no information about the adequacy of the cubic air space per person. Unfortunately this can not be given, since no attempt was made to measure the dwellings. The following few examples of overcrowded homes will doubtless give the reader a better idea of the house congestion than the figures convey (other examples will be found in the further discussion in this section):

A family of nine persons lived in two rooms. The main dwelling was a one-room frame house covered with sod. Three of the children slept in a dugout about 25 yards away.

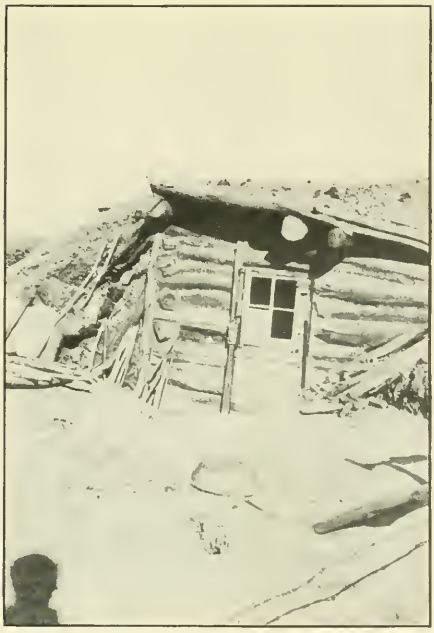
Another family of seven persons lived in a one-room frame shack 12 by 14 feet. The two beds, a cookstove, and two chairs practically filled the room. The mother said that it was very hard to keep the house clean because it was so small.

In another family seven persons lived in a tiny frame house. A bed, a small table, a stove, and a few chairs entirely filled the main room, in which the whole family slept.

In another instance eight persons lived in a one-room house which was a combination of a tar-paper shack and a dugout. The room is very large. At the back were four beds; in the middle, a small cook stove. A table, some chairs and boxes used as chairs, and a shelf of dishes made up the chief furnishings of the room. There is only one window and so the back of the room is very dark. The outside of the house is picturesque, with a row of ears of red corn hanging across the front and some bright flowers in cans.

Another family, consisting of five persons at the time the baby was born, lived in a small one-room tar-paper shack. They have now moved to a "fairly large" frame house, which consists of two rooms and a pantry.

A very common arrangement in one-room houses and in larger houses where one room has to be used for many purposes or shared by many persons is a curtain hung on a wire across the middle of the room. Such a curtain can be pushed aside in the daytime and at night so drawn as to divide a room into two parts. This is a helpful arrangement, but of course does not relieve the crowding. The



DUGOUT WITH LOG FAÇADE. NO OPENING TO OUTSIDE LIGHT EXCEPT THE DOOR.

COMBINATION DUGOUT, FRAME, AND SOD HOUSE.

STONE HOUSE. NOTE BUFFALO SKULL ON ROOF.

UNUSUALLY WELL-BUILT "ROOT HOUSE"; ALSO WATER BARREL.

extent to which the overcrowding in the small houses adds to the difficulties and discomforts of confinement may be imagined.

CONSTRUCTION OF HOUSES.

The houses varied in type of construction and kind of building material much more than they varied in size. In the breaks nearly everyone lived in a log house. Elsewhere, the prevailing types were divided about evenly among the dugout, the tar-paper shack (a light frame structure covered with tar paper to keep the wind out), the sod house (made by cutting oblong chunks of sod and piling them on top of one another to form the walls), and the gumbo houses (made of the fine gumbo clay so common in the area and much like the adobe houses found farther south).

There were some houses made of stone, which in some instances had been quarried from the buttes on the homestead; and a few frame houses of the type common to the farms of the Middle West—plastered and ceiled inside and probably more comfortable than the other types, though not nearly so attractive in appearance. Often a house would combine several styles—would be part dugout, part sod, and part log; or a combination of stone and dugout; or part sod and part tar-paper shack.

Dugouts.

The dugouts, which are scarcely more than holes or caves in the sides of the hills, always have to be finished with some supplementary material, such as sod, log, or stone. Sometimes a home begins its existence as a sod, frame, or log house on the side or at the foot of a hill. Later, when the occupants wish to enlarge it, they dig back into the hill to make another room, and the house then becomes part dugout. In the main, the dugouts represent the crudest type of home, and the occupants usually regard them as temporary expedients to be given over for farm purposes or to be used only as supplementary rooms when better dwellings can be constructed.

A typical dugout, occupied by four persons is a small one-room home, almost inaccessible from the main road. To reach it, one must descend a steep, rough embankment and then climb another, equally steep and rough. However, steps have been cut into the hillside, and lead three-fourths of the way up the hill to the door. Only the front of the house protrudes from the hill. Two windows, each about 2 feet square, furnish all the light and ventilation for the home. A small bed, a stove, one chair, and several boxes constitute the furnishings and practically fill the little room.

Another dugout consists of two rooms, with a log front, on the side of a hill. Back of the kitchen a hole which serves as a cellar has been dug and provided with a ventilating flue. A family of eight occupies

the house. It is unscreened, and the chickens take advantage of their free access to the dwelling. Across one window, a chair has been placed to keep the pig from falling off the hillside into the room.

Another one-room home is a frame shack half buried in the side of a hill. The front of the house, which protrudes from the hill, is poorly constructed, and great cracks let in the wind. The meagerly furnished room offers only boxes for seats, and the narrow bed, which apparently serves the four persons who live there, has scant covering.

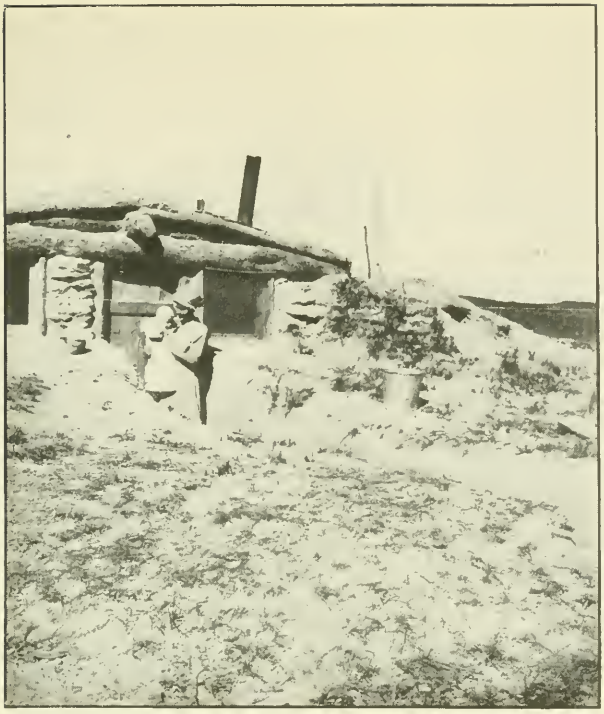
Sod and gumbo houses.

The sod and gumbo houses are often much more comfortable and much more attractive than would be imagined by persons unused to them. As a rule the walls are thick and keep the houses cool in summer and warm in winter. Sometimes the interiors are plastered. A common and attractive plaster used for the interiors of gumbo houses is a mixture of lime, gumbo, and sand, which makes a fairly smooth sand-colored surface. The walls of some gumbo houses have been decorated by a sprinkling of laundry bluing, which gives a surprisingly effective "all-over" design.

A neat one-room house is built of gumbo mixed with straw, giving it a finish like that of a tinted concrete house. The walls are 18 inches thick. The roof of sod is reinforced with heavy timbers. Cross ventilation is secured by two windows, 2 feet square, in opposite walls. Both windows and the door are carefully screened. A family of five persons lives in this one-room dwelling.

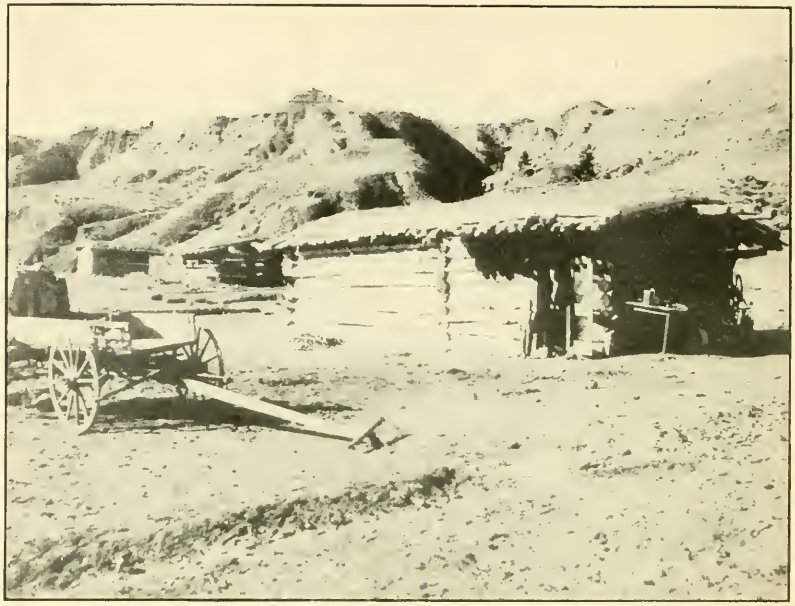
Another sod house has two rooms in which nine persons dwell. It is built somewhat on the principle of the dugout; that is, though it stands on comparatively level ground, one has to descend four steps to enter the two rooms. The walls are decorated with an odd blue stencil. The house, though crowded with children and furniture, was clean and cool.

An exceptionally good two-room sod house has a very attractive exterior. The red, slanting roof and the bright-red broken shale piled up against the base of the house contrast pleasantly with the gray of the sod. The three short windows placed side by side, giving the effect of one broad, low window, carry out the horizontal lines of the house. Inside, the walls are a warm gray plaster. The main room is large. The floor is covered with linoleum, with rag rugs here and there. Under the broad windows on one side of the room is a long, low box used as a window seat; and on either side of this are bookcases full of well-worn books. There is no crowding in this house, for it is occupied by only three persons—a mother, father, and baby.



THE FATHER OF THIS BABY HAS TAKEN THE PRECAUTION OF FENCING THE ROOF OF THE DUGOUT AGAINST CATTLE.

INSIDE A ONE-ROOM FRAME HOUSE.



LOG HOUSE IN HELL CREEK.

LOG AND FRAME HOUSE AND OPEN WELL.

Log houses.

In the breaks, where lumber can be found, most of the houses are made of logs. The breaks were settled before the other parts of the area, and most of the well-to-do ranchers lived there; it is, therefore, not surprising that some of the log houses are large and well furnished.

One ranch home, large in comparison with most of the homes in the area, has four well-furnished rooms, including a large kitchen and living room. Good porches, screened in, and a well-fenced yard add much to the comfort of the household of six persons.

Another home in the breaks is a broad, low, log house, nestling under a group of pine trees and facing a broad expanse of cleared land. The mother and father carefully selected the most effective location for the house. It has three large, comfortable rooms, well furnished and not crowded, though seven persons occupy them. There are plenty of broad, low, small-paned windows, with rows of plants on the window sills.

The majority of the homes—even in the breaks, where they are somewhat larger than those in the rest of the area—are small and crowded. One log house, in which live nine persons, consists of two rooms; the main sleeping room is the cellar under the house, though there is one bed in the upper room also. The interior walls of this house are painted white. The ceiling is papered with newspapers.

Log houses have certain structural disadvantages. They must be "chinked up" about twice a year with cement or mud. The logs contract and expand with the differences in moisture and temperature, so the chinking can not be permanent.

The interiors of the homes in the area represented many stages, from the crude and almost unfurnished to the plastered, ceiled, and well-furnished home. Many houses had no floors except the ground, and often a floor covered only one room or occasionally only part of a room.

FURNISHINGS.

Many families, either because of financial necessity or because of the difficulty of getting furniture from the railroad, were using various makeshifts and substitutes for regular furniture. The most common instances were boxes used for chairs. One family had no bed but used springs set on boxes. In another instance, where a family of seven lived in a one-room house, the mother and two children used a narrow bed and the rest of the family slept in a flax bin which occupied one side of the room.

Frequently very attractive homemade furniture was found. One family, for example, had a homemade cupboard, and a table so

hinged that it folded up and served as the door for the cupboard; also a baby's high chair, ingeniously made chiefly of small boxes, which could be converted into a kitchen table.

Occasionally a family, realizing the need for recreation, purchases a phonograph, organ, or piano before ceiling or plastering the house or buying much needed furniture. Thus, a family of 11 lives in a one-room log house which is not plastered or papered. The room was not large, but it contained a wooden bed, an iron bed, a table, a range, a heating stove, a dresser, several open shelves, nine chairs, an empty box to be used as a chair, another box used as a soiled-clothes hamper, a board across some small wooden horses, a half dozen full gunny sacks, and a phonograph. The difficulty of housekeeping and caring for children in this house may be imagined. The home was not screened and chickens flew in and out at will.

SANITATION.

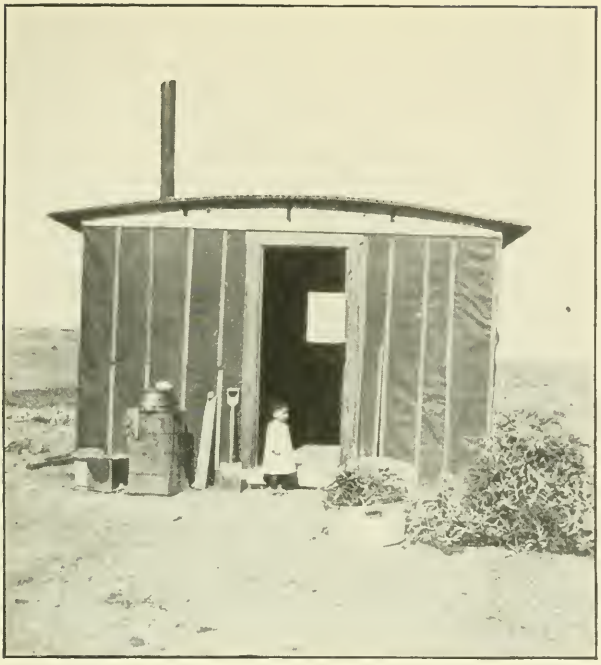
Flies.

Despite the difficulties imposed upon the housewife by the crowding, the lack of a convenient water supply and of household conveniences, the homes were on the whole clean. Two hundred and sixty-two homes, or well over half, were adequately screened against flies; that is, had screens in good repair at every door and window.

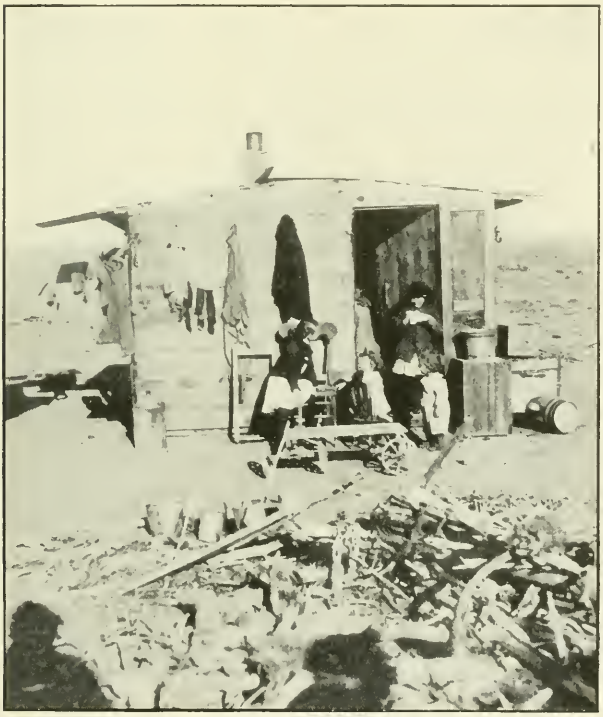
Unfortunately even adequate screening does not insure freedom from flies. Where there are children running into and out of the house, the screen door is only a slight protection. Moreover, when a house is poorly constructed, or in the case of log houses when the mud chinking falls out, flies enter through the cracks. Some houses, immaculately clean and well screened, were infested with flies. In the homes which were not screened the flies during the hot summer were a great and constant nuisance. The infrequency of sinks aggravates the fly problem, for many of the women throw the waste water out of their doors. Unscreened privies were doubtless prolific breeding places for flies. The unscreened homes have other intruders to contend with besides the flies. In warm weather, when windows and doors must be kept open, the chickens and pigs avail themselves of the housewife's unwilling hospitality and in spite of much shooing and chasing make themselves quite at home, especially on the sod floors.

Privies.

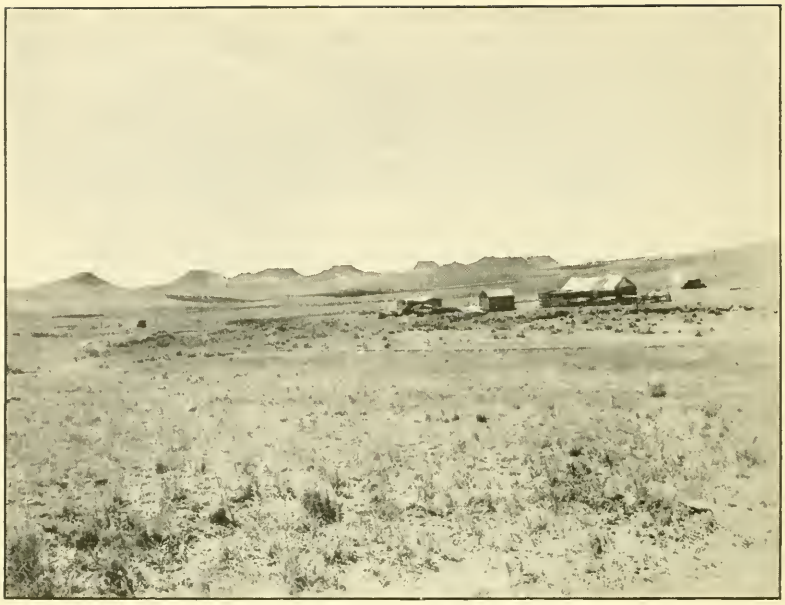
Although one or two well-to-do families were planning to install flushing toilets, at the time the survey was made the area had none—not even in the little villages. Slightly more than three-fourths of the families had privies. For the most part, these were deep-pit privies, closed in back, built of wood, and occasionally covered with



TAR-PAPER SHACK. NOTE PILE OF SAGEBRUSH.



FRAME SHACK.



A RANCH AND A TYPICAL SKY LINE.

COMBINATION DUGOUT AND TAR-PAPER SHACK.

tar paper, very few being of the open-in-back type so common in southern rural areas. Often these wooden privies had no doors; in some instances a piece of burlap or sailcloth hung in the doorway provided privacy, but only a precarious protection against the weather. Some privies were found without tops, making them useless in rainy or snowy weather. Covers to the seats were often lacking—doubtless partly because of the high cost of wood.

Several privies were built of sod, and occasionally a dugout would be used as a privy. One, for instance, in the side of a hill, was part sod and part dugout. It was built mostly of sod, with a wooden roof, seat, and door. This was an insanitary arrangement, for animals could easily enter it. In most privies, however, the excreta were protected from chickens and larger farm animals, though very little effort was made to build the privies fly-tight.

One hundred and eight families, or nearly one-fourth, had no toilet of any kind. One family, for instance, had been homesteading for over three years and had not yet built one. The high cost of timber, which has frequently been commented upon in these pages, explains this lack in many cases. On the other hand, people often reported that they had had toilets, but that the high winds had blown them away.

Water supply.

Perhaps the most serious problem in sanitation is the water supply. Over the greater part of this dry country water is scarce and hard to get; and well drilling is expensive, costing $1.50 to $2 per foot, and no one knows how deep he will have to drill before he reaches water. One father drilled 200 feet for water at a cost of $300. Only 54 families had drilled or driven wells; the great majority (313) had dug wells; 62 had springs; and 32 depended on a river or creek. These figures represent the sources of water supply used during the greater part of the year.

Even dug wells are expensive and laborious to dig, and there is always much uncertainty of finding water. In one family the mother and father together dug eight wells on their homestead and yet found no water. They said that the water from a near-by creek was "bitter" and had caused the death of $900 worth of horses in two years. They haul their drinking water from a dug well 1 mile away; and the water for the stock and for household use from a similar well one-half mile away. Another family had dug two wells near the house, but both were washed in by cloud-bursts. The family has since dug a third well, 23 feet deep.

Some shallow wells which are dug in coulees depend for their supply upon day-to-day seepage; these can be used only part of the time. One family, for instance, dug such a well in a coulee a quarter of a

mile from their house. For about five months of the year, in the winter and spring, they can not use it, because the coulee is then filled with snow or surface water. During this period they use creek water.

Many families use several water supplies for different purposes. Nearly all the water in the area contains much alkali or soda and some of the wells and creeks are so alkaline that they can not be used for drinking, cooking, or for the stock. One family used four separate sources—one for drinking water, one for water for washing, and two for the cattle only. Another family used a dug well for water for the stock, and because the well water had been "getting low" on account of the drought the family drinking water was carried from a relative's homestead, a quarter of a mile away. In another instance the drinking water was hauled 5 miles, and the other water 3 or 4 miles. The father said that half his time was spent hauling water and driving his horses to and from water.

In winter melted snow or ice was commonly used. Some families who lived near a river harvested as much ice as they could and melted and used it as long as it lasted in the spring. The mother in one family where this plan was followed assured the agent of the purity of the water, stating that "freezing destroyed all germs." In this same family, when the ice gave out, barrels were hauled to the top of the cliff overlooking the river, and water was dipped from the river in pails, which were carried up and emptied into the barrels. The barrels were then hauled home, a distance of $1\frac{1}{2}$ miles. This laborious method is the one usually followed by the families using river water.

The use of melted snow is common. One mother complained that in the preceding winter the snow was so deep over the spring that the family had to use snow water until the father could tunnel in to the spring. He was planning to pipe the water 300 feet nearer their house. It is now 500 feet away.

This report can make no definite statement about the pollution or purity of the water, because no samples were analyzed in connection with the survey. Although the State board of health maintains a laboratory to which people may send samples of water for analysis, there is no complete inspection of the water supply. The facts that there have been a few recent cases of typhoid fever in the area studied, that very few of the wells are protected from possible pollution, that many shallow wells are used—all lead one to think that some of the water is polluted. A few of the springs and dug wells were carefully cased, provided with pumps, and protected against dirt and surface drainage, but these were the exceptions. For the most part the wells and springs were open, sometimes accessible to the stock,

and usually ready to receive the dust and dirt which the frequent high winds helped to distribute. The spring rains and the melting snows wash much surface soil into these unprotected wells. The use of buckets, whether lowered into the well by ropes or dipped in by hand, is a possible source of pollution.

To protect a dug well from pollution would seem to many families too expensive to be undertaken, partly because, since a well is in danger of drying up in summer, it does not seem worth while. There was much talk in the area of the taste of the water, but very little as to its purity.

Because the country is new and sparsely populated, few serious results have followed the lack of caution in regard to the water. Doubtless, when the area becomes more thickly settled, diseases which are attributed to impure water will become a menace to the health of the community, unless measures are taken to protect the water supply.

INFANT CARE AND THE WELFARE OF YOUNG CHILDREN.

INFANT MORTALITY.

In any discussion of the welfare of young children, the first question usually relates to infant mortality. Of the babies born in a given area how many live and how many die, and what have been the causes of the deaths? Unfortunately this question can be answered only in part, because in some cases where babies died no physician was in attendance, and the information about the causes of death is not specific. Moreover, the number of children covered by the inquiry is small and it is difficult to draw conclusions.

No attempt has been made to calculate an infant mortality rate for the period covered by the survey. This period—five years in duration—was so long that deaths which occurred four or five years prior to the time of the survey might easily have been missed.

Of the 198 live-born babies whose mothers were visited within a year after childbirth 14 died before the visit of the agent. Since none of these infants had had a chance to live a year it is probable that a few more failed to complete this period. The 14 deaths which had already occurred among the 198 infants give, therefore, a minimum infant mortality rate of 71 per 1,000.

This rate of 71, while lower than the rate for any city studied by the bureau, is much higher than the rate of 54 per 1,000 found for the rural areas studied in Wisconsin, and nearly twice as high as the rate of 40 per 1,000 found for the Kansas area.

Of the 14 babies who died all but 4 were less than 1 month old at death. There were no deaths of infants over 5 months old.[1]

Preventive medicine has shown that a large proportion of stillbirths and deaths in early infancy can be prevented by providing for the infant and its mother adequate care before, during, and after childbirth. The lack of such care has already been discussed. Some of the infant deaths in the area could probably have been prevented if the safeguards approved by modern science had been available.

[1] The average age of the group at the time of the survey was approximately 6 months. Probably all the deaths under 1 month in the group are included in the 14 that occurred before the agent's visit. For the months after the first, about as many deaths would have occurred after the visit of the agent and before the first birthday as already had occurred—that is, perhaps 4 deaths would have to be added to the 14 recorded to make up the complete toll of deaths in the first year of life, giving a rate of 91 per 1,000.

INFANT FEEDING.

The majority of the mothers showed great intelligence in feeding their infants. Practically all the babies received some breast feeding, all but 5 per cent being breast fed for the greater part of their first month. In the third month the proportion was still high—about 80 per cent exclusively breast fed—and in the sixth, 60 per cent. After the sixth month many mothers began to supplement breast feeding with artificial food of some kind. However, in the ninth month 22 per cent of the infants were exclusively breast fed, and only 21 per cent had been weaned before the middle of that month.

These findings are much the same as those of the Kansas survey. They are in marked contrast to some of the findings of the infant mortality investigations which the bureau has made in cities where infants were weaned at much earlier ages.

Pediatricians have long emphasized the importance of breast feeding. This survey, like the other rural surveys of maternity and infant care which the Children's Bureau has made, bears out their advice. In all these surveys the custom of breast feeding is more prevalent, and the period over which children are breast fed is longer than in the city surveys; and in spite of the many untoward conditions of prenatal, confinement, and postnatal care found in several of the rural areas studied, and notably in Montana, the infant mortality rates are in all of them lower than the rates for any of the cities studied. To be sure, many factors besides feeding affect the health of babies, but this almost invariable coincidence of a low death rate with a high percentage of breast feeding is significant.

As the Montana mothers were wise in nursing their babies, so also were they for the most part wise about withholding solid food during the children's early months. The definition of solid food as used in this connection includes such things as gravy, milk thickened with flour, cereals, or crackers, in addition to the foods which one usually considers solid. Only one baby in five had been given any such food by the end of the sixth month; at the end of the ninth month 38 per cent of the infants had not yet received any solid food.

Although the proportion of mothers who fed their babies wisely and carefully was high, there were many cases in which a child was improperly fed and in which the mother needed guidance. Thirty-two babies had been breast fed as late as their eighteenth month and nine as late as their twenty-fourth, the mothers not having realized that such late nursing was disadvantageous to the babies and to themselves. One infant, since his third week of life, when he was weaned, had been given "whatever he wanted" or whatever the

family had. The mother, hearing that cereals were good for babies, had gathered some oats from her field and boiled them and fed them to him. The baby, at 10 months of age, was decidedly retarded in development and in poor physical condition. He had no teeth, was small and thin, with an unnaturally white skin, and eyes encircled with wrinkles. The mother of this child was very eager for suggestions about infant care.

Another mother, in addition to breast milk, began giving the baby tastes of food before she got up after confinement. She said she liked highly seasoned foods, and gave the baby a little of everything she ate, including wine, meat, and vegetables. Another mother, whose baby (weaned at 2 months) suffered from indigestion, did not consult a physician, but read some books which advertised prepared foods and tried to feed the baby according to these books; but the patent foods did not agree with the child. Finally the druggist suggested cows' milk and lime water, a food which at last the baby could digest. The mother commented that "one trouble with feeding a child patent food is that if the drug store runs out of it, you have to change the baby's diet, because in winter it is impossible to get supplies from the nearest city, 90 miles away."

Many mothers were eager for advice and had made great efforts, occasionally misdirected, to get information about child care. Several mothers, when visited by the Children's Bureau agents, were much worried about problems of infant feeding. One, for example, was pregnant and did not know whether or not to wean her baby. Another mother said she was afraid she "would never be able to raise her baby" because she had not had enough breast milk, and had had to wean him at 2 months. Since that time she has had much trouble finding food which the child could digest and had changed his food several times, according to the advice of the neighbors. She first used cream and water; then for a short while cows' milk; then some patent foods; and after the sixth month cows' milk again. The child was delicate until the seventh month, but a physician was never consulted.

Occasionally mothers received with surprise the advice to consult a physician about such a thing as feeding a baby. To some this seemed an extravagance, until it was made clear that good advice about the feeding and care of a child would probably keep it from getting sick and in the end be a saving of money as well as of suffering. Unquestionably public-health nurses, whom the mothers could consult about the care of their children as well as about many other health matters, would find a fertile field for their activities in the area studied and would be gratefully received by the mothers.

INSTRUCTION IN INFANT CARE.

Just as a considerable amount of reading about prenatal care was reported, so, too, many mothers (162) reported literature as a source of information about child care. Here, also, the types of reading matter ran the whole gamut from such standard works as those of Holt, and the publications of various Government and State bureaus, to quite worthless patent medicine advertising matter, and to works purporting to be of medical value to laymen but whose whole reason for existence seems to be to give employment to book agents.

One mother reported that she had followed exactly a bulletin from the Department of Agriculture on the feeding of babies. Another said that in order to rear her baby according to the advice given by a physician in a woman's magazine she had had to fight the prejudices of grandparents and neighbors, who urged the family diet for the child. Thirty-four mothers had received instruction about the care of their babies from physicians and 20 from trained or practical nurses. The majority of the mothers had had no instruction about infant care, though many of them realized their need of such information.

DIFFICULTIES OF GETTING MEDICAL CARE FOR CHILDREN.

The same limitations which make difficult the securing of medical care for mothers in confinement—weather, bad roads, lack of physicians and nurses, and expense—complicate the care of children in need of medical attention.

"Winter weather," said one mother, who lived 45 miles from a physician, "makes us prisoners. I can't tell you how I'm worrying about the winter, for if my baby should get sick I'd be helpless."

Many accounts of the difficulty of getting necessary care for sick children and of the lack of such care were given. One mother had to take a child who had appendicitis over 125 miles to the nearest hospital for an operation. The appendix ruptured on the way and the child nearly died, but fortunately recovered.

Nine of the 21 children who died were unattended at death by a physician. One 5-day-old baby became ill at a time when the Big Dry Creek had overflowed its banks and there was no way to cross it; therefore, no physician could be sent for. The baby was taken sick in the afternoon and died in the evening. In another instance the nearest physician, who lived 8 miles from the family, was away when its 18-day-old baby fell ill, and the next doctor, who lived 25 miles away, was sent for. He did not arrive until after the baby's death.

In another family, in which none of the children is robust, one child at the age of 1 year had a long series of convulsions for many days. No physician was secured for him. The nearest physician lived 25 miles away and across the river. This child recovered but is still not strong. In still another family, which lived about 40 miles from a physician, the mother and three children had scarlet fever and were for several days without medical attention of any kind. Fortunately they recovered.

The lack of medical facilities is especially serious in cases of accidents. There was one very distressing instance of this. A small child got a peanut shell in his windpipe. His parents at once took him to the nearest village, but the physician there could do nothing, and they hurried on to the county seat. There they were told that a specialist at another city, about two hours' ride away, could operate. When they reached that city they found that the physician did not have with him the necessary instruments, and the mother and baby started for an eastern city. The child became so much worse on the train that the conductor put the mother off at a small city. Physicians there operated and removed the peanut shell from the windpipe. The child died, nevertheless, a few hours later.

In another instance, a pin lodged in a child's throat, and the child had to be taken over 125 miles to have it removed; 18 hours elapsed before the family reached the physician who extracted it.

Another child fell from his sled and cut his nose badly. The nearest physician—45 miles away—was sent for. He did not arrive that day, and late the following afternoon the mother, on her way to summon him again, met him 15 miles from home. He came and attended to the wound. His charge was $45.

Sometimes, in cases of illness as well as of accident, a mother, to save time and expense, will take a sick child to a physician instead of sending for the physician and waiting anxiously for his arrival. One mother, for example, drove 7 miles one winter day with a very sick baby. The long, cold drive in the snow aggravated the child's illness, and he died after reaching the village where the physician lived.

Frequently, and especially in cases where there is no acute illness but a chronic condition, cost leads the family to neglect or postpone treatment. One mother, whose baby's feet were deformed, making it difficult for him to learn to walk, realized that something should be done, and said that if next year's crop was good, she would take the child to the nearest city for treatment. The distance—about 150 miles—was so great that the expense in addition to the doctor's bill would be very considerable. Another mother, whose child seemed to have a defective palate, said she realized that medical attention was needed, but that she could not afford it. In another family a

3-weeks-old baby had convulsions, but no doctor was sent for, partly because the family could not afford one and partly because when previous children suffered from the same symptoms physicians had said that nothing could be done.

Often families are most eager for medical attention for their children and can afford to pay a moderate price but do not know where to get any specialized care. There are no specialists within the area. One mother whose children had symptoms of adenoids did not know where she should take her children for treatment. Several families had taken their children to hospitals in near-by cities, and some to specialists in the East. A mother whose baby had stayed in a hospital for five weeks suffering from what the local physicians had diagnosed as "summer complaint" felt sure that the child would have died had she not been able to take him to a hospital.

Because medical care is so inaccessible and so expensive, and because there are no public-health nurses in the area to whom people can turn for advice, mothers are often driven to the use of home remedies or to the counsel of neighbors. These neighbors are often as uninformed about child care, first aid, and home nursing as the mothers themselves.

Occasionally the mothers take other means of securing advice. One father, while in a city, saw a physician, to whom he told his sick baby's symptoms and from whom he obtained some medicine. In another family an elaborate home treatment was applied to a child bitten by a rattlesnake. In addition to giving the antidote of whisky, the family applied the entrails of chickens and sheep to the wound. The child finally was laid inside the slaughtered sheep, that his entire limb might be in contact with it. Fortunately the child recovered.

BIRTH AND DEATH REGISTRATION.

At the end of the Children's Bureau inquiry the bureau sent to the child-welfare division of the State board of health the names of the live-born children covered by the inquiry, excluding those whose mothers went out of the area for confinement. By checking these names with the registered births the State board of health made a birth-registration test in order to learn how nearly the area studied approached the standard set for admission into the United States birth-registration area; namely, the registration of at least 90 per cent of its births.

Although Montana has practically the model birth-registration law, only 31 per cent, or less than one-third, of the live births checked for the five-year period covered by the inquiry were found to be registered. Moreover, nearly one-fifth of these births were registered after the mothers had been visited by the agents of the Children's Bureau, who pointed out to parents the need for registration

and the disadvantages which a child might suffer for want of a birth certificate. Of the infants born in the year preceding the agents' visit 39 per cent were registered. The fact that a large percentage of births were not attended by a physician explains, to a certain extent, the lack of registration; not entirely, however, for of the physicians' cases 47 per cent, or nearly half, were not registered. These figures are presented not as an index to birth registration for the State as a whole—for doubtless many counties in the State have good registration—but as the findings of the test for the area studied.

A test of death registration, including maternal and infant deaths, showed that death registration was incomplete. Of 21 infant deaths, 12 were unregistered. Some of the maternal deaths also escaped registration. Several parents said that their children's deaths had not been registered and usually added the excuse that they had had no physician in attendance. In one instance, in a remote neighborhood in the breaks, a Children's Bureau agent, after having been told that there had been no death certificate for a child who had died, asked what was done when permission for burial was needed. The reply was: "Why, we can't wait for permission to bury our people when any of them die. It takes far too long. We had no certificate for my child and when Mrs. ———'s three children died a neighbor came and built coffins for them and we just took them up over the hill and buried them."

In connection with the incomplete birth and death registration it is significant that the State board of health, though it is provided by law with a bureau of vital statistics, has no special appropriation for the work of that bureau. One clerk does practically all the work of filing the birth and death certificates.

The importance of birth registration has never really gripped the attention of the United States, though it has been recognized in every other civilized country. Many parents have never heard of birth registration, and many others who do not know whether their own births are registered, and who may never have suffered as a result, are careless about providing birth certificates for their children. To some it seems the physician's business—possibly something which the law requires to prevent malpractice, perhaps merely "red tape." But many of the Montana parents who are now struggling hard to win their homesteads and to dig a livelihood from their thirsty half sections would be chagrined by the thought that a child of theirs might lose the opportunity of inheriting their hard-won acres because some one—physician, midwife, or the parent himself—had neglected to provide a birth certificate.

It is only recently, and only in certain parts of the country, that propaganda to interest every mother and father in registration of the birth of every infant has been spread. The value

to the individual child is not the only stimulus which moves Federal, State, municipal, and private organizations to urge every physician to register births, and every parent to see that his child's birth is promptly registered. It is not only because a child will probably need a birth certificate to prove his legal right to inherit property, to vote, to go to work, or to be protected against premature employment, or for many other uses which could be itemized; there is a bigger and even more cogent reason for birth registration and for death registration. A count of the number of people in a country or community—of the number who are born and the number who die—is the only general measure now procurable by which we can gauge public health. Only by knowing how many babies are born and how many die in various communities and under varying social influences can we learn what conditions are favorable to infant life and what conditions are fatal to it.

Until every birth and every death is registered we have no means of measuring the infant health of a community and, therefore, are not able to improve it to the possible limit of improvement. For this reason every parent should regard it as a patriotic duty to see that the birth of his child is promptly registered.

CHILDREN'S HEALTH CONFERENCES.

The survey included a series of children's health conferences held in cooperation with the child-welfare division of the State board of health and with local committees in four different parts of the area studied. The purpose of these conferences was to demonstrate the value of a thorough physical examination of well children, and to offer to every mother an opportunity to consult with a Government physician about the individual needs of her child and about the many puzzling problems which arise in the bringing up of children.

The conferences were held for five days, and 129 children were examined, nearly all of them under 6 years of age. About one-third of these children had no defects, and of the defects found in the others many were slight, and such as could be obviated by a change in diet, or in some cases by a single visit to a dentist. On the whole, the conferences bore out the impression which all the agents making the survey had had—that these Montana babies were for the most part very sturdy and well.

The conferences were in no sense clinics, and neither treatment nor medicine was given by the physician in charge. When defects which needed the attention of a physician were discovered, parents were advised to take their children to the family doctor; or, when the defects discovered required the services of a specialist, counsel was given accordingly. The thorough and careful examinations by the physician frequently revealed a slight defect or inferiority in development which at the time was causing no distress to the child, but which might later prove a serious handicap and which by immediate treatment might be easily cured.

Several mothers who had been worried about their children, but who had not consulted a physician, were much relieved to learn that the condition of the children was not serious and could be easily and quickly remedied. One mother whose husband had died of tuberculosis was very anxious about a child who had been "ailing" and who she feared had inherited the father's disease. Her relief may be imagined when the examination revealed that the child had no symptoms of tuberculosis but had been unwisely fed and merely needed a better balanced diet. Another mother, who had thought that her child had kidney trouble, was greatly relieved to know that the trouble was much less serious.

After consultation, each mother received a written summary of the advice given her in regard to the child examined. The following few examples will illustrate the nature of these summaries:

This child is undersized and his distended abdomen indicates that he has poor digestion and that there is too much starch in his diet. His general nutrition is poor but can be improved by careful feeding. Give him only three meals a day with a cup of milk in the middle of the morning and the middle of the afternoon; let him have only stale toasted bread with his milk. Fruit juices and green vegetables would correct his constipation. Weigh him each month and keep a record of his weight to see that he gains.

This baby is very well, and normally developed. It is important to regulate his feeding so that he may remain well. Follow the advice given in Infant Care, pages 42 to 49. We shall send you another circular about feeding a baby of this age.

The foreskin should be pushed back gradually. It does not seem necessary to have the baby circumcised.

This child is in splendid condition except that his leg is paralyzed. The most important thing for this boy is to have his leg treated at once by a specialist. While the baby is young is the only time that anything can be done to improve the condition.

His tonsils are somewhat large and he seems to breathe a little through his mouth. When you have the leg attended to, it would be wise to have a physician examine his tonsils.

This child is above the average height and weight for his age and is in excellent condition. His tonsils are somewhat large but will not need attention unless he has sore throat frequently or begins to sleep with his mouth open.

Mary is a nervous child. She should have many hours of sleep every day and should live in the fresh air as much as possible. She is of normal height for her age, but is somewhat underweight. An effort should be made to have her gain in weight. Farmers' Bulletin No. 717 of the Department of Agriculture gives some useful information about food for children of this age.

Her eyes show a slight tendency to cross. If this continues, you should have an oculist prescribe treatment. Her teeth are slightly discolored and should be brushed daily. Good care of first teeth is very important.

The local committee, to whose activity the success of the conferences was largely due, helped with the arrangements, advertised the conferences, secured much local cooperation, and carried on much useful propaganda on behalf of the employment by the county of a public-health nurse. The committee for the first conference prepared a petition, copies of which were taken to the later conferences, and which were signed by nearly everyone who attended the conference, and by many other persons. It read as follows:

We, the undersigned, earnestly petition the board of county commissioners that they appoint a county nurse whose services shall be

given to the western half of —— county, with ——— as headquarters. The legislature of 1917, by the enactment of the child-welfare law, empowered you to make this appointment. Because of the war, physicians are being called to the service of their country and large sections of the county are left without medical attention, which will render the services of a nurse more necessary than before in giving health supervision to school children, in preventing sickness among mothers and children, and protecting the health of the community from infectious diseases.

An important part of each conference was an exhibit, in which were shown and explained many devices to lighten the mother's work in caring for her children. These included simple equipment which mothers should have to bathe the baby and to prepare his food; the proper outfits and clothing for infants, the right kind of bed, and an easily made basket bed for the small baby; effective and inexpensive methods of screening the baby; iceless refrigerators in which the baby's milk could be kept; and many other devices. Instructive posters on the care of children decorated the walls. Paper and scissors were provided for mothers who wished to cut out patterns of the model baby clothes while waiting their turn for the examination. These patterns and the life-size models of the clothes were among the most popular features of the conferences. In the afternoon demonstrations of the proper way to bathe and dress a baby were given to the school children by a nurse who used a doll. At the two conferences which were held in the largest village in the area there were afternoon and evening meetings, with illustrated lectures on the care of children, on the value of the public-health nurse, and on the Children's Bureau, and also discussion.

The fact that some families drove 25 miles each way in open wagons, and that many came over 15 miles, to have their children examined showed their general interest and enthusiasm, and gave promise that the physicians' advice would be heeded. One mother, who was seen about six weeks after the conference, said that since she had followed the doctor's advice and taken the baby off condensed milk and put her on cows' milk the child had gained a pound and one-half, whereas up to the time of the conference the baby had been losing weight. This mother said that she had written to all her relations whose babies were given condensed milk, telling them what the change to cows' milk had done for her child.

Another woman reported: "Our post office is like a different place now on mail days. The mothers who come in, and even the fathers, ask one another what they are feeding their babies and whether they took the doctor's advice."

That conversation on infant feeding should begin to compete with talk about the dry weather is excellent testimony to the value of such

conferences. "Conferences like these should be held often," said one mother.

If such conferences could be held often, if a public-health nurse could follow up the cases in which medical care by a physician was needed, and help the mothers arrange for such care, if she could be available for advice at regular intervals, many of the health problems of bringing up children in this new country would be solved.

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STATE AND COUNTY ACTIVITIES ON BEHALF OF MOTHERS AND YOUNG CHILDREN IN RURAL AREAS.

In any discussion of State activities it must be remembered that Montana is a young and largely rural State which was practically uninhabited until 1860 and was admitted to the Union only in 1889. These facts increase the credit for her many progressive legislative accomplishments, a few of which affect directly the well-being of mothers and babies in rural districts as well as in cities. Her active State board of health; the fact that Montana was among the first States to create a child-welfare division in the State board of health and to encourage rural public-health nursing by a law which permits counties and rural districts to employ public-health nurses; her model birth-registration law, even though it is not yet everywhere enforced—these are among the things to be mentioned.

Unfortunately, the legislature which realizes the importance of these measures fails to appropriate enough money to make them as effective and extensive as they should be to serve the best interests of the people in all parts of the State. Thus, though Montana has excellent birth and death registration laws and a law providing a bureau of vital statistics, it has appropriated no funds to be used especially for the study of the returns of birth and death registration, for the enforcement of the registration laws, or for propaganda for improved registration. The child-welfare division has carried on some propaganda on behalf of birth registration, but its duties are so many and its staff so small that its activities in this direction have necessarily been limited.

The law which created the child-welfare division and made it possible for counties and school boards to use public money to employ public-health nurses is such an important step toward the welfare of Montana children that it deserves to be quoted in full:[1]

An Act to Create a Child Welfare Division to be Under the Direct Supervision of the State Board of Health, Prescribing Its Duties and Powers and Providing for Its Maintenance.

Be It Enacted by the Legislative Assembly of the State of Montana:

SECTION 1. That a Child Welfare Division be, and the same is hereby created, which shall be under the direct supervision of the State Board of Health.

[1] Acts of 1917, ch. 121.

SECTION 2. The duties of this Division shall be to make and enforce regulations; to carry on a campaign of public health education and to take all possible steps for the better protection of the health of the children of the State.

SECTION 3. School Boards may employ in their discretion regularly qualified nurses, duly registered in the State of Montana, to act as school nurses. In sparsely settled communities, two or more School Boards may unite and employ a school nurse, the salary of such nurse being paid pro rata according to the assessed valuation in the school districts.

SECTION 4. County Commissioners are hereby authorized, at such time as they deem necessary, to employ regularly qualified nurses, to be known as County nurses, for duties under the Child Welfare Division.

SECTION 5. The Superintendent of Public Instruction and the Secretary of the State Board of Health, as soon as possible after the passage of this Act, shall meet and formulate rules and regulations governing the work of school, county and public health nurses, which rules and regulations, when regularly passed by the State Board of Health, shall invest the said State Board of Health with full power of supervision and regulation of said school and county and public health nurses.[1]

SECTION 6. The State Board of Health, through its Child Welfare Division, shall prepare and distribute to the school, county and public health nurses all necessary report blanks.

SECTION 7. The Secretary of the State Board of Health, subject to the approval of said Board, shall employ such officers as may be necessary to carry out the provisions of this Act.

SECTION. 8. Nothing in this Act shall be construed or operate so as to interfere in any way with the exercise of the child's or parent's religious belief, as to the examinations for, or in the treatment of, diseases; provided, that quarantine regulations relating to contagious or infectious diseases are not infringed upon.

SECTION 9. All acts and part of Acts in conflict herewith are hereby repealed.

Approved March 3, 1917.

This law makes one stride ahead of similar laws in other States which provide for public-health nurses. It centers in the State board of health "full power of supervision and regulation of said school and county public-health nurses," an excellent provision, making it possible to standardize the work of rural public-health nursing throughout the State. Even the nurses employed by philanthropic and industrial organizations are required by the rules to notify the State board of health of their appointments.

The law was passed in March, 1917. At the end of the survey two counties had already taken advantage of it and were employing nurses. In Silver Bow County, which contains the city of Butte, the work was practically "city work"; but in Teton County—a

[1] See Appendix B for the rules and regulations, p. 97.

rural county with many of the same problems as the one surveyed—the nurse was doing rural work. More recently a nurse was employed in Musselshell County; and in Yellowstone County, the city of Billings and the rest of the county united to employ two public-health nurses and a full-time public-health officer.

The work in Teton County had been very recently begun, but at the time the Children's Bureau survey ended an excellent start had been made. The children of many of the rural schools had already been examined, and the nurse was hoping to visit all the schools inaccessible by railroad and examine the pupils before the winter weather set in. The county has an area of 6,566 square miles,[1] only a comparatively small part of which is within easy reach of the railroad and much of which is rough, mountainous country. The nurse used a small car for her work. She was planning, after completing her examination of school children, to broaden the scope of her usefulness to include instruction in home nursing, prenatal care, and many of the other usual activities of the public-health nurse.

Very recently the State (through the department of home economics at its agricultural college, at Bozeman), in cooperation with the States Relations Service of the United States Department of Agriculture, has employed eight home demonstration agents in various counties, and in one city, to bring to women the most recent findings of domestic science and home organization. Although the immediate purpose of this work is food conservation, it includes much instruction which should lighten the work of housekeeping. The agents have had to concentrate most of their work on the communities easily reached by railroads, and where women's clubs and other organizations already exist. Unfortunately a county such as the one surveyed by the Children's Bureau would be among the last to be served by these agents, since nearly all its area is inaccessible by railroad.

What is the county studied doing for the mothers and young children living in the area? Aside from the work on the roads,[2] which will make it easier than hitherto for some families to secure physicians, the answer is, nothing or nearly nothing.

Here, again, the factor of distance enters as a partial explanation. No part of the area studied was nearer than 65 miles from the county seat, and some parts were over 150 miles away. The people in the area go to the railroad points in other counties for their supplies, and do not even participate in their own county's fairs.

In this huge county, where means of communication are so lacking, the area studied—a region larger than the State of Connecticut—is

[1] County Clerk's Annual Report to the Board of County Commissioners, 1916, Teton County, Mont., p. 3.

[2] See discussion of Roads and Means of Communication, p. 17.

so isolated from its seat of government that the county health officer must delegate such duties as would fall to him in the area to local doctors, and the county agriculturist finds it impracticable to go into the area more than once or twice a year. Recently the size of the county has been given official recognition by the appointment of a deputy superintendent of schools, with headquarters in the western part of the county.

But size alone does not explain the official isolation of the western half of the county. In answer to questions about the various problems of the area—the road situation, the school situation, etc.—officials frequently mentioned that the western half, being so much more recently settled than the eastern half of the county, paid such a small proportion of the county taxes that the expenditure of these taxes in improvements was made accordingly. Of about $17,000,000 worth of taxable property, a little under $2,000,000 was located in the western half of the county. This statement surprises the casual observer, because, though the eastern half of the county is a little more thickly settled, and more plowed land and more improved farm dwellings are seen, nevertheless the country does not present any evidence of such vast difference in wealth or enterprise.

It is true that most of the homesteaders in the eastern half of the county have "proved up" and are therefore paying taxes on their land. The real explanation of the difference in assessed valuation, however, lies in the fact that one-half the land in the eastern half of the county is, or has been, railroad property, for some years ago every other section of land was granted by the United States Government to the railroad for an area extending 60 miles on each side of the track. Taxes are paid on all this land. The railroad runs through the southeastern corner of the county and the taxes paid by the railroad and on the land which still belongs or has ever belonged to the railroad are credited to the eastern half of the county. Therefore, the mere accident of the location of the railroad brings the homesteaders in the eastern half of the county greater advantages than are enjoyed by those in the western half. These advantages have expressed themselves so far chiefly in better educational opportunities, better roads, a greater proportion of the services of the county agriculturist, and practically all the services of the county health officer.

Even the eastern half of the county, however, has done very little for its mothers and babies. The county seat, a thriving city of about 4,000, is readily accessible to many, though not to the greater part of its families. In the county seat a small private hospital, with a capacity of 12 or 14, is available to those who can pay. Here, too, are several women who make a business of taking mothers in for

confinement, either renting them rooms for "light housekeeping" while they await confinement or providing both board and room. In these cases the confinements are attended by local physicians. One physician stated that he had attended about 100 cases at one of these homes, but that many of the women were realizing that the cost was almost as great as at a hospital, where they could have more comforts.

The county hospital, which is on the outskirts of the county seat, does not take maternity cases except as a matter of poor relief. Only one case was attended there between January and November, 1917.

The county health officer is employed on a part-time basis. His duties of inspecting dairies, meat markets, restaurants, etc., at the county seat consume so much of his time that he can seldom go out to the other parts of the county, nor has he time to devote to public-health propaganda. He feels very strongly that a corps of county public-health nurses are needed.

SCHOOLS.

In the course of the inquiry into conditions surrounding mothers and young children there was, to be sure, frequent discussion of the family as a whole; and the question of schools was constantly brought up by the homesteaders, who urged the Children's Bureau agents not to ignore this important aspect of child welfare.

Although it was not the province of the Children's Bureau to make a study of the school facilities of the community, nevertheless the reiteration of the question, "Can't you help us to get schools for our children?" was so insistent that any discussion of this homesteading country would be wanting without at least a brief reference to the school situation. One learns from the report of the superintendent of public instruction that among the schools in a progressive State like Montana, "during the year ending August 31, 1916, there were eight schools in session one month and 175 schools in session for less than four months,"[1] and that there are thousands of children who are not provided with any kind of school.

Many neighborhoods in the area studied are confronted with serious school problems. Often parents reported that 18 or 20 children in their neighborhood had no school. In other cases the school term was very short. Even where the children had four or six months of school a year it was usually divided into two terms—one in the spring, and the other in the autumn, distances and bad weather making winter attendance impossible to many children. Nowhere was this the result of indifference or inertia.

The father of 11 children, 7 of whom ranged from 6 to 17 years of age and had no school within 6 miles, was working very hard to get one for his neighborhood. He and his neighbors were willing to give $200 toward it and to build and equip it themselves. In many instances (the county superintendent of schools states that she knows of 20 or 30 in the area) the people in a community had contributed the land, out of their private funds bought the lumber, and with their own labor built the schoolhouse. Even then they were frequently unable to secure equipment or to get a teacher for more than one or two months.

In one case where a group of neighbors supplied a school building for their 19 children, the school district furnished only four benches and desks. "After much complaint," said one mother, "we succeeded in getting a few more benches, but some of the children still have to sit on boxes or logs. For a while there was no black-

[1] Fourteenth Biennial Report of the Superintendent of Public Instruction, State of Montana, 1916, p. 15.

board, but the school supervisor finally took one from a school 6 miles south that had two blackboards."

A foreign-born woman, one of the oldest settlers, told of her efforts to secure schooling for her children. In spite of much agitation, she was unable to get any kind of school until the oldest girl was 12 years old. When it was finally established it was held in a deserted cabin. Because she sent several children she was asked to attend to the heating of the building in the winter. During the coldest weather she decided to live in the schoolhouse from Mondays to Fridays, in order to keep the children warm. This was so difficult (she had some children under school age) that she finally offered, to be used as the school, one room of her two-room shack, and she and her family lived in the kitchen. At one time she and a neighbor drove 75 miles in an open wagon to a school election, on their return bringing seats, books, and other equipment for the school. Only recently has a satisfactory school been built at a reasonable distance—1½ miles from her home.

In one neighborhood the agents of the Children's Bureau found near the schoolhouse a half dozen shacks and dugouts to which families had come to live for the school term. There was also a sheep wagon in which, the agents were told, five or six children had lived the previous winter, the older children caring for the younger.

Some families who could afford it, or who had relatives living near a school, had sent their older children away for the school term. Naturally, however, many parents did not wish to let their children go away from home, especially since it was often difficult to find a satisfactory home for a child. Of course, the younger children were seldom sent away.

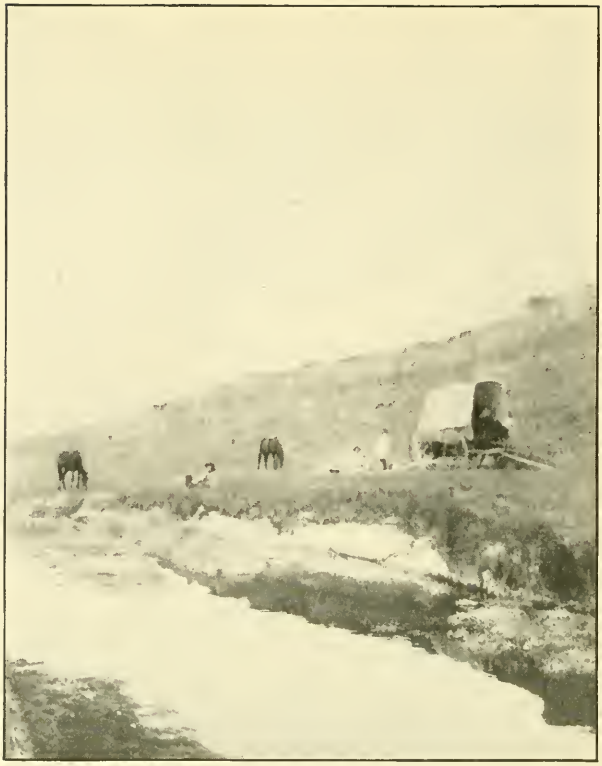
Several families had moved away and others were planning to leave the county because their children had no opportunity to get an education. One family that had "proved up" had succeeded with its farming venture; had raised prize corn; whose children belonged, by correspondence, to corn clubs; and which was altogether an unusually intelligent and progressive family, moved away because the only school accessible to the children had a session of only two months a year. The mother of another family said: "The hardest thing about living out here is that the children have no schooling. My three—they're 7, 11, and 12—are the only ones of school age in this school district, so there is no hope of getting a school very soon. But they must have an education, even if we have to give up the place." When the lack of educational opportunity drives such people away the country suffers a serious loss.

These typical efforts and struggles to provide schools are convincing proof that the parents in the community appreciate their children's urgent need of an education. Why, then, are not schools pro-

METHOD OF CONSTRUCTING A SOD BUILDING.

A SCHOOLHOUSE, AND CHILDREN ARRIVING.

A GOOD ARGUMENT FOR A SCHOOL. THERE IS NONE WITHIN REACH OF THIS FAMILY.



CAMPING FOR THE NIGHT ON THE BIG DRY. AN INCIDENT IN A 10-DAYS' TRIP, WITH A 4-WEEKS-OLD BABY.

ARRIVING AT A CHILDREN'S HEALTH CONFERENCE.

vided by public money? One would anticipate the answer, insufficient public funds; and yet the answer is not altogether lack of public funds, for the superintendent of public instruction states that the county studied had at the end of the 1916 school year—August 31, 1916—a balance of $52,975.75, and that all this money could have been spent in providing schools, equipment, and teachers for children, and lengthening the school term. The answer, therefore, is to be found not in the lack of money for schools but in the distribution of the money. In a letter to the Children's Bureau, the Montana superintendent of public instruction remarks:

Rural-school problems in Montana are greatly complicated by the very unequal distribution of school funds. The general county levy of 4 mills and the State funds are distributed equally among all of the children of the county between the ages of 6 and 21. But the special levies which the school trustees themselves make, and which are the main source of revenue in many districts, are the cause of great inequalities in funds.

Many school districts have unsurveyed and unpatented lands, which, of course, are not subject to taxation. Many also possess only poor land assessed at a very low valuation. Others have most valuable lands, well improved, and possibly are fortunate enough to include within their boundaries 20 miles or more of railroad, a power plant, sawmills, a smelter and a mine or two.

It quite often happens that the district with the largest number of children possesses the lowest assessed valuation and that the school district valued at half a million dollars or more has within its boundaries not more than 6 or 8 children of school age. These conditions prevent Montana from ever giving equal opportunities in education to her children till her laws are amended.

In the county you studied all of the railroad in the county is to be found in the extreme eastern end. Schools there are well equipped and quite good salaries are paid. Educational opportunities of children are good. In the remainder of the county there is a constant struggle in many districts to provide even a short term of school and many communities are without school at all. Only a few extremely large districts in this section of the county have sufficient funds with which to maintain schools.

A larger unit of taxation with equal distribution to all children is badly needed. In a State where the wealth of counties varies so greatly, it seems the State would be the best unit of taxation for schools. However, the county would prove a far better unit than the small school district with very great inequalities of wealth and would greatly improve the educational opportunities of children in the State.

One is stirred with admiration for the intelligence and resourcefulness of the homesteader and at the same time confronted with the certainty that unless adequate provision for education is soon made the generation of children now growing up will be sadly inferior in education to their parents, and the country, now so full of promise, will suffer serious deterioration.

CONCLUSIONS.

The findings of the survey emphasize the need of a program for better protection of maternity and infancy in rural districts. Adequate care for the mother before, at, and after childbirth is most essential. In the Montana area the two most signal agencies for providing such care would be accessible hospital facilities and a public-health nursing service.

HOSPITAL PROVISIONS.

The large number of mothers who left the area for confinement; their difficulties in getting to a town in time, and the general expense of living away from home while waiting for confinement; the high cost of confinement to the mothers who were attended by physicians in the area; and the fact that most of the mothers appreciated the need of good confinement care lead one to believe that a series of small cottage hospitals—equipped especially for maternity cases, but with some provision for the treatment of accidents and other noncontagious cases—would be well patronized by the population. In addition to their use as hospitals, these cottages might serve as the health centers for a rural nursing service.

If such hospitals were provided with waiting quarters where expectant mothers could live inexpensively while waiting for confinement, they would be enabled to leave home in good season before confinement, and thus avoid the danger of being isolated by bad weather from medical care. Moreover, the last weeks of pregnancy would have the advantage of supervision as well as relief from heavy household cares.

There are in Montana, as in other States, many counties which could afford to inaugurate a system of cottage maternity hospitals and public-health nursing. On the other hand, there are counties like the one studied which, while they might have funds for one hospital, could not support a system of hospitals. In some counties it might be necessary for the State and the county to cooperate in maintaining such a service. A precedent for such cooperation of State and county is to be found in the employment of county agricultural agents, in which the United States also cooperates.

RURAL NURSING SERVICE.

This report has frequently touched upon the need of public-health nurses. Their value in safeguarding the health of mothers and young children, as well as the health of other members of the community, would be inestimably great. This has been demonstrated in New Zealand, and, since the war, England's increasing employment of public-health visitors is recognized as the great factor in her lowered infant-mortality rate.

The area studied in Montana is so large that, to cover it adequately, several nurses would be needed. The work of the nurses might include visiting mothers in their homes; bedside care in emergencies; holding, at the village or country schoolhouses, consultations in infant care and prenatal care; giving lectures on home care of the sick; and examining school children and following up the examination in the homes to see that children needing care receive it.

To quote from a previous bureau report:[1]

During the last few years it has been proved that trained nursing service is invaluable in supplementing medical supervision during pregnancy. If this is true in the city, where it is comparatively easy to consult a physician, it is still more true in the country where the distance from the physician makes it more difficult to see him regularly. A nurse who has had special training and experience in prenatal work, and who is especially equipped to discern the danger signs of pregnancy, can be of great help to the prospective mother in the country and to her physician. She will advise the mother about daily details of her care of herself so that she can avoid much discomfort and disability; she will urge her to see her physician early for a thorough preliminary examination and later when necessary; she will urge her to send samples of urine regularly to be examined, or, if asked to do so, she will make examinations of the urine and report the result to the physician. Such prenatal work may be one of the most important phases of the duty of a county public-health nurse.

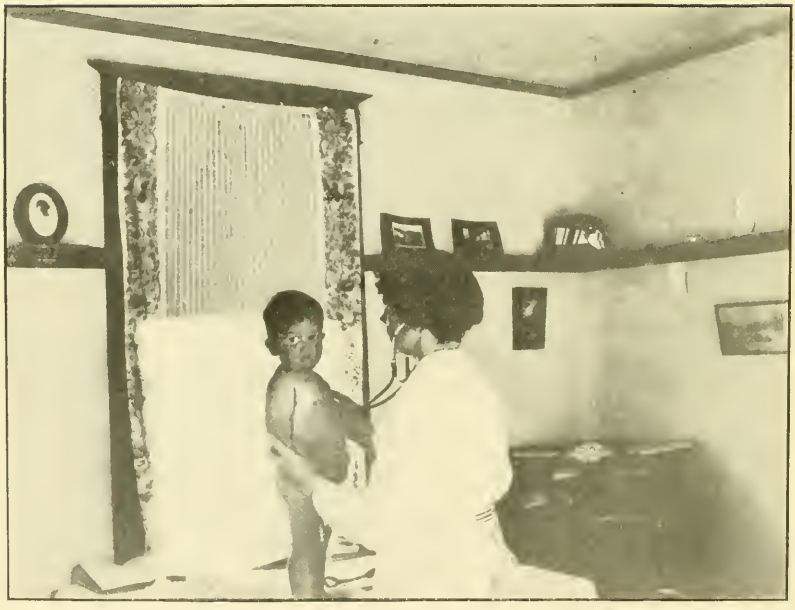
In the area studied in Montana each nurse would need an automobile in order to cover her district. It is very important for the county commissioners, when appropriating money for a nurse to appropriate enough for a car and for running expenses. The commissioners in Teton County, where a nurse is employed, estimated that the car, its upkeep, and the nurse's expenses would approximate $100 a month. The employment of each nurse—including the expenses mentioned above and a salary of $1,200 or $1,500—would mean an expenditure by the county of approximately $2,500 a year. This seems a large sum of money, but the return on the expenditure in life and health and in the saving to the community of losses on account

[1] Moore, Elizabeth: Maternity and Infant Care in a Rural County in Kansas, p. 48. U. S. Children's Bureau Publication No. 26, Rural Child-Welfare Series No. 1. Washington, 1917.

CHILDREN'S HEALTH CONFERENCE EXHIBIT HELD IN A TINY COUNTRY POST OFFICE AND STORE.

EXHIBIT IN ANOTHER VILLAGE.

READY TO BE WEIGHED AND MEASURED.



CHILDREN'S BUREAU PHYSICIAN EXAMINING BABY AT CHILDREN'S HEALTH CONFERENCE.

of sickness would more than compensate for the original outlay. The child-welfare law already quoted [1] permits the use of public funds for the employment either by the county or by school districts of public-health nurses.

Public-health nurses would be cordially welcomed by the women in the area. The petition prepared by the local committee for one of the children's health conferences, the many signatures which it received, as well as the general comment throughout the area, reveal the eagerness of the population for such nursing service.

One mother, commenting on the needs of the area, said: "You'll find an intelligent class of women out in this county. We have to live in poor surroundings and we have few pleasures, but we're responsive to suggestions, and always eager to watch any opportunity that makes for better conditions in our families. A public-health nurse in this community would never complain of lack of cooperation."

This comment sums up very succinctly the attitude of the community toward the need of better facilities for maternity and infant care.

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[1] See p. 82.

APPENDIX A.

TABLES USED AS BASE FOR DISCUSSION IN SECTION ON MATERNAL MORTALITY.

TABLE I.—*Death rates from diseases caused by pregnancy and confinement per 1,000 live births, in specified foreign countries for 1910.*[a]

Country.	Death rates from diseases caused by pregnancy and confinement per 1,000 live births.	Country.	Death rates from diseases caused by pregnancy and confinement per 1,000 live births.
Italy	2.4	France	4.6
Sweden	2.5	Switzerland	4.8
Norway	2.7	Australia	5.1
Prussia	3.2	Ireland	5.3
Hungary	3.4	Spain	5.3
Japan	3.6	Belgium	5.5
England and Wales	3.6	Scotland	5.7
New Zealand	4.5		

[a] Excerpt from Table XV, Maternal Mortality, U. S. Children's Bureau Publication No. 19.

TABLE II.[a]—*Average death rates per 100,000 population in certain countries from diseases caused by pregnancy and confinement, 1900 to 1910.*

Country.	Death rates per 100,000 population from diseases caused by pregnancy and confinement.	Country.	Death rates per 100,000 population from diseases caused by pregnancy and confinement.
Sweden [b]	6.0	Hungary	13.3
Norway	8.1	Japan [b]	13.3
Italy	8.9	Australia [f]	14.1
France [c]	10.3	Belgium [d]	14.8
Prussia [d]	10.4	Scotland [b]	14.8
England and Wales	11.1	United States [g]	14.9
New Zealand	12.4	Switzerland	15.2
Ireland [e]	12.9	Spain [b]	19.6

[a] Meigs, Dr. Grace L.: Maternal Mortality from All Conditions Connected with Childbirth in the United States and Certain Other Countries, Extract from Table XII, p. 56. U. S. Children's Bureau Publication No. 19, Miscellaneous Series No. 6. Washington, 1917.

[b] Rates based on figures for 1901 to 1910.

[c] Rates based on figures for 1906 to 1910.

[d] Rates based on figures for 1903 to 1910.

[e] Rates based on figures for 1902 to 1910.

[f] Rates based on figures for 1907 to 1910.

[g] Rates based on figures for death-registration area which increased from year to year; in 1900 it comprised 40.5 per cent of the total population of the United States and in 1910, 58.3 per cent.

TABLE III.—*Death rates per 100,000 estimated female population [a] aged 15 to 44 years from diseases of pregnancy and confinement, for the State of Montana and for certain foreign countries, 1910 to 1915.*[b]

	Years.	Rates.		Years.	Rates.
Montana	1910	78.9	Ireland	1910	55.60
	1911	95.9		1911	52.46
	1912	89.1		1912	56.05
	1913	92.0		1913	53.81
	1914	111.4		1914	50.67
	1915	98.4			
Belgium	1910	56.03	Norway	1910	31.96
	1911	59.05			
	1912	63.79	Prussia	1910	43.17
England and Wales	1910	35.74	Scotland	1910	62.24
	a 1911	35.74		1911	60.99
	a 1912	36.54		1912	58.92
	a 1913	35.74		1913	62.24
	a 1914	37.75		1914	65.14
France	1910	39.64	Sweden	1910	29.30
				1911	29.76
Hungary	1910	55.25			
	1911	53.43	Switzerland	1910	51.50
				1911	57.08
Italy	1910	36.82		1912	54.07
	1911	34.09			
	1912	35.45			
	1913	35.91			

[a] Female population aged 15 to 44 calculated from the estimated total population for each year on the assumption that the percentage of the total population that is included in this sex and age group is equal in each year specified to the per cent included in this group at the date of the census around 1910. For Montana see note, Table IV.

[b] Or for the years during this time for which figures were available.

TABLE IV.[a]—*Death rates per 100,000 estimated female population aged 15 to 44 years from diseases of pregnancy and confinement for the death-registration States, 1910 to 1915.*

Registration States.	1910	1911	1912	1913	1914	1915
California	51.7	57.1	57.5	61.9	56.4	54.4
Colorado	80.5	74.4	56.9	67.1	52.7	61.1
Connecticut	53.5	45.8	61.4	49.0	59.2	60.5
District of Columbia	72.7	58.3	48.3	62.4	55.6	47.1
Indiana	70.8	75.3	70.2	64.5	70.1	62.1
Kansas	.....	.....	.....	.....	52.5	55.3
Kentucky	.....	76.4	67.2	69.2	65.2	60.4
Maine	66.3	59.9	45.2	50.9	51.1	64.2
Maryland	59.9	56.7	67.0	72.6	58.0	59.0
Massachusetts	47.1	57.4	50.4	55.5	61.2	56.2
Michigan	73.0	76.3	63.6	85.4	77.0	77.4
Minnesota	52.4	62.6	55.3	64.6	56.4	56.2
Missouri	.....	70.7	67.7	71.8	67.0	59.5
Montana	**78.9**	**95.9**	**89.1**	**92.0**	**111.4**	**98.4**
New Hampshire	52.5	59.4	66.1	58.9	68.5	60.3
New Jersey	61.9	64.5	60.7	64.6	58.8	57.8
New York	58.8	58.4	52.5	54.3	56.5	54.5
Ohio	63.2	61.7	60.8	58.1	66.0	57.8
Pennsylvania	78.8	69.7	66.1	73.9	73.8	70.4
Rhode Island	58.9	62.6	55.1	49.3	53.0	59.7
Utah	84.3	71.5	72.0	71.4	55.3	81.1
Vermont	78.2	62.6	62.4	69.8	89.8	60.5
Virginia	.....	.....	.....	83.3	98.4	93.9
Washington	76.1	65.9	63.3	60.0	48.9	48.1
Wisconsin	50.4	56.9	46.3	50.6	52.3	56.2

[a] The deaths are found in the volumes on Mortality Statistics of the U. S. Bureau of the Census. Estimates of total population, based upon an assumed constant annual increase, equal to that from 1900 to 1910, are given in Bulletin 133 of the Census Bureau. The female population aged 15 to 44 years has been computed on the assumption that the per cent of the total population in this sex and age class is the same in each year shown as in 1910 on the date of the census.

These rates are subject to error both in the estimate of population and in the assumed per cent in the special age and sex group. The latter may partly or wholly offset, or may be in addition to, the former. The later the date of the estimate after 1910 the more subject it is to error.

APPENDIX B.

RULES AND REGULATIONS GOVERNING COUNTY, PUBLIC-HEALTH, AND SCHOOL NURSES IN MONTANA.[1]

RULES GOVERNING COUNTY AND PUBLIC-HEALTH NURSES.

1. Public-Health nurses employed by city or county, philanthropic or industrial organizations shall be registered nurses of Montana; and on receiving appointment to such positions shall notify the State Board of Health of said appointment giving full name and address.

2. Those employed by towns or cities shall make home to home visits, giving actual bedside care, when necessary, and giving instruction in simple nursing service, hygiene and sanitation.

(Calls must not exceed an hour in duration, unless absolutely necessary. However, in the observance of this rule the nurse is allowed discretionary power.)

3. The nurse responds to every call but is not allowed to continue on a case unless a doctor is in attendance; except in cases of chronic patients, when the nurse follows original instructions of doctor.

4. In their work for doctors, nurses are required to adhere to the etiquette of their profession and are not allowed to prescribe in any case.

(However, when out of communication with doctors, emergencies must be met.)

5. The nurse must feel her responsibility in the sanitary conditions of the city, and report violations to the proper authorities. She must teach everywhere the relation between disease and insanitation.

6. The nurse should learn the agencies of her community and cooperate with proper authorities to improve the living conditions of her people. In cases of poverty, unemployment, overwork, bad housing, underfeeding, and such conditions, she can assist by cooperating with church, charity, and fraternal organizations.

7. Neglected and ill-treated children should be reported to the nearest deputy of Child and Animal Protection Bureau.

8. In outbreaks of contagious disease, (a) the nurse makes house to house investigations, to find early and missed cases.

(b) The nurse inspects and reports observance of quarantine. She instructs as to what constitute quarantine, proper disinfection of bed linen and clothing, of human excreta, and in good, general nursing care.

(c) The nurse must wear cap and gown and would suggest that she also wear rubber gloves to handle patient. She should use proper disinfection of nasal passages and mouth after calls.

[1] Montana State Board of Health, Special Bulletin No. 7 (Apr. 10, 1917), pp. 9–11.

(d) The nurse is deputy of local health officer and makes her daily reports to local Board of Health and monthly reports to State Board of Health on blanks furnished by the Child Welfare Division.

9. County nurses may at the discretion of the County Commissioners be required to perform the duties of the school nurse in one or more of the school districts of the county.

10. In order to secure uniformity of reports, the standard visiting nurse record cards should be used by all city or county nurses.

REGULATIONS GOVERNING THE WORK OF SCHOOL NURSES.

Reg. 1. As soon as a school nurse is appointed by any district, she must notify in writing the Director of the Child Welfare Division of the State Board of Health of her name and address.

Reg. 2. The school nurse shall be under the direct supervision of the Superintendent of school or schools where she is employed, and shall furnish the Superintendent with such reports as he or she may direct.

Reg. 3. It shall be the duty of the school nurse to make an examination of the children in the school or schools where she is employed and to notify the parents or guardians of the children of the physical defects and diseases from which the children appear to be suffering, and she shall call upon such parents or guardians and explain to them the nature of the defects or diseases from which the children appear to be suffering and in a tactful way advise that their family physician be consulted. The nurse must be careful not to advise the services of any one physician to the exclusion of the other physicians.

Reg. 4. Quarantine Regulations. For infectious or contagious diseases, see General Quarantine Regulations No. 39.

Reg. 5. On notification by the Superintendent or teachers of the absence from school of any child without a known cause, the school nurse, shall, as soon as possible, visit the home of such child, and if the child is found sick and gives symptons of having a contagious disease, the nurse shall immediately notify the local health officer.

Reg. 6. The school nurse shall notify the local Board of Health of any grossly insanitary condition in the community which she may find, and failing to have such condition remedied by the local authorities, she shall notify the State Board of Health.

Reg. 7. The school nurse shall make a monthly report to the Child Welfare Division of the State Board of Health on blanks furnished by that division.

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